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LIBERTY MEMORIAL HIGH SCHOOL,
LAWRENCE, KANS.

Wm. B. Ittner, Architect,
St. Louis, Mo.

Development of the School Building Program of Lawrence, Kansas

Harry P. Smith, Superintendent of Schools, in Collaboration with Wm. B. Ittner, Architect and School Specialist, St. Louis, Mo.

Lawrence, Kansas, the seat of the State University is a slowly growing community of some fifteen thousand inhabitants. Like many other university cities it found itself with a high school situation in which the enrollment had increased out of all proportion to the increase of population or of building facilities. In 1890 the city erected a small high school building, but scarcely had its doors opened when classes were assigned to basement rooms and attic spaces which were never designed for classrooms. In 1907 this plant was supplemented by a "manual" building which contained shops, home economics rooms, science laboratories and a gymnasium but again the ever increasing enrollment drove classes into spaces unfitted for educational work and even compelled the renting of quarters some distance away from the high school plant.

By 1918 this situation had appealed to the community as intolerable, and bonds in an amount equal to the first statutory limit were voted for a new plant. But rising costs and increasing numbers combined to make this amount wholly inadequate. Meanwhile the community was confronted by another serious

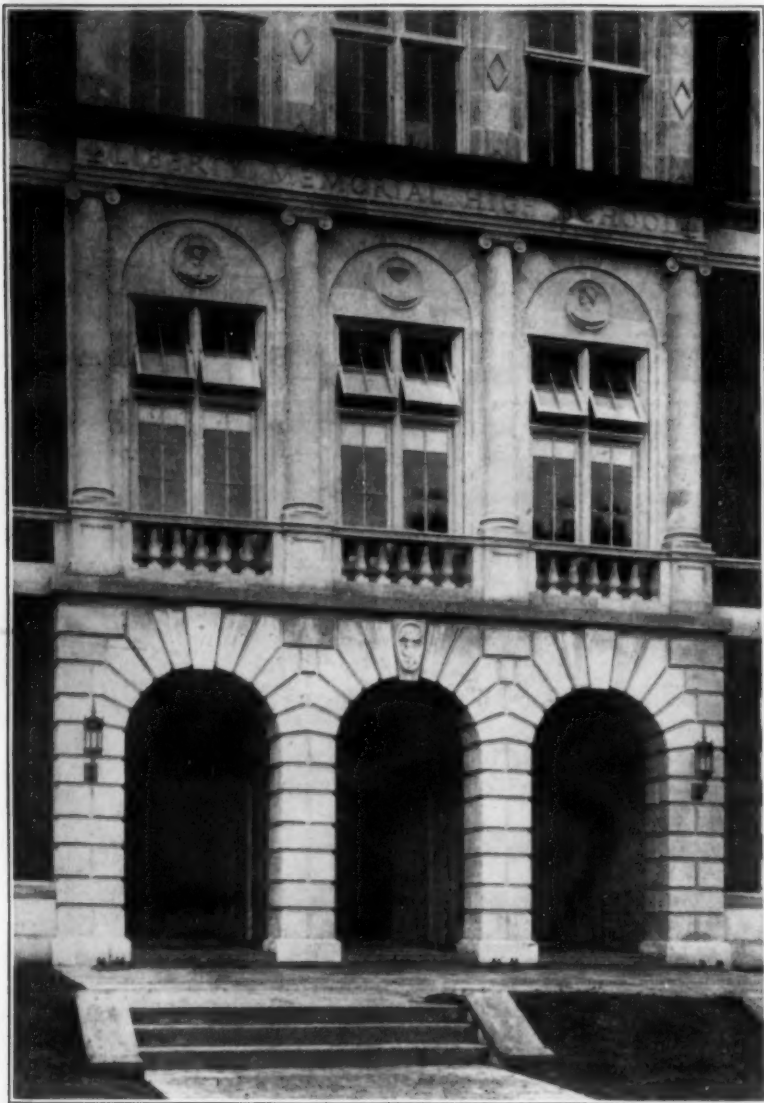
situation. Four of the seven elementary school plants of the city had been erected during the period immediately following the Civil War when there was a great influx of population. These buildings were rapidly reaching the point where the repair bills were out of all proportion to the returns. But eight new rooms had been added for a decade and only four rooms had been replaced by new construction for a still longer period. At the same time the intermediate school of 400-500 was housed in a twelve room elementary school erected in 1900 with no reference whatever to modern school conditions.

Altogether it appeared that the community faced not one problem but three—a new high school plant, enlarged facilities for a rapidly expanding intermediate school, and the early replacement of approximately 35 elementary schoolrooms. In other words, it was apparent even to the casual observer that the community was confronted not only with the building of a high school plant but the replacement of a large portion of its existing school plant.

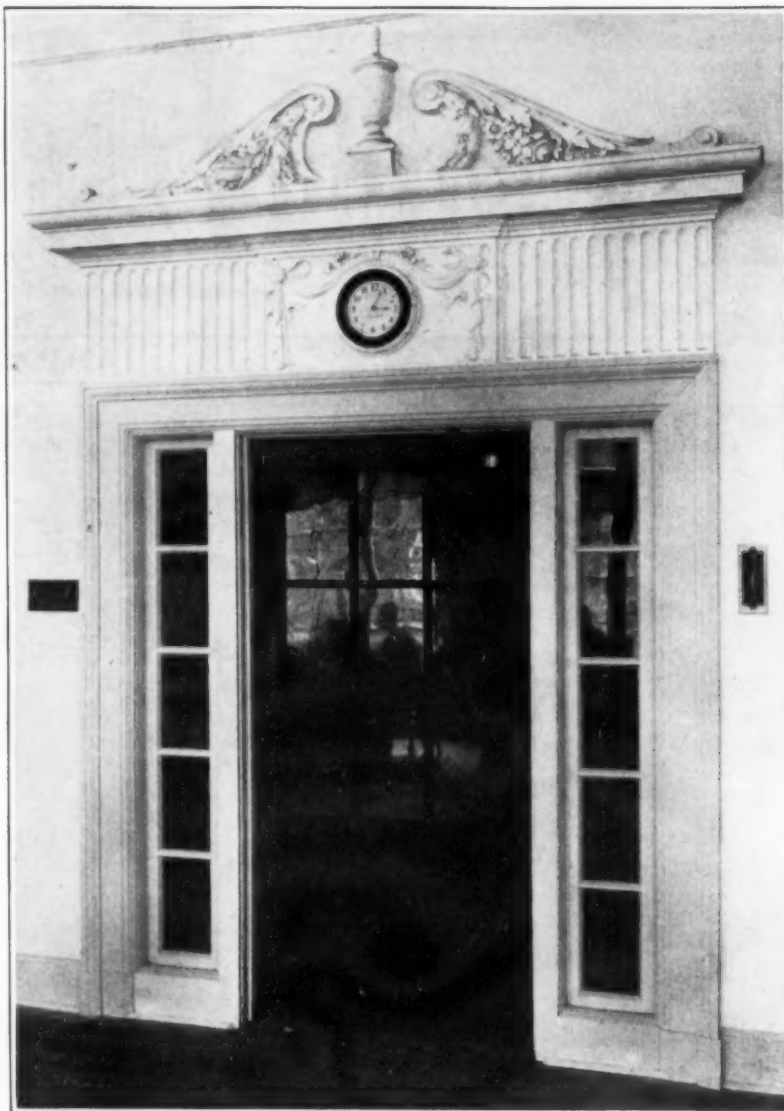
The board of education and the administration finally determined that the community

should face all the facts before proceeding to meet even its most pressing needs. After considerable deliberation they called upon the Bureau of School Service of the State University of Kansas, composed of the faculty members of its School of Education, to make a building survey. They deemed it advisable, however, because of the intimate relationship existing between the University and the city to call in an outsider who would serve as a member of the survey commission to evaluate the old buildings and make specific recommendations concerning new ones. Supt. E. E. Lewis of Rockford, Ill., now of Flint, Michigan, formerly associate professor of education at the State University of Iowa and director of the Des Moines, Iowa, high school survey, was asked to become a member of the group. This survey committee made a most thoroughgoing and exhaustive study of all the factors involved in planning a building program.

With the required data before them the committee proceeded to consider the school building needs, taking into consideration population and enrollment factors, the organization policy of the board, and the educational objectives to be



MAIN ENTRANCE, LIBERTY MEMORIAL HIGH SCHOOL, LAWRENCE, KANS.



DETAIL OF THE LIBRARY ENTRANCE, LIBERTY MEMORIAL HIGH SCHOOL, LAWRENCE, KANS.

The building was planned for 1,200 students, at a cost of \$471,000. Equipment costs totaled \$64,437. The school provides complete physical education facilities, a total of fourteen class rooms, two study rooms, one library, seven laboratories, two of which are for home economics, large undivided areas for shops, a music room for 200 students and an auditorium with a seating capacity for 1,200. Exterior memorial treatment has been confined to the main entrance. Within the building memorial treatment has been confined to the auditorium, library and main corridor.

realized in each division of the organization proposed. This led to the recommendation of the "ultimate" elementary, junior and senior high school plants of the city. But the members realized that such a recommendation might be wholly futile without a careful consideration of the financial aspects of the situation. They accordingly inquired into the wealth of the city and its increase, school costs, tax rates, and the school and municipal indebtedness. Comparative data were secured from many other cities. Various methods of financing programs of capital outlay were studied resulting in recommendations covering the financing of the program prepared by the survey committee.

Copy of the Lawrence School Survey may be secured from the Extension Division of the State University at Lawrence, Kansas.

The detailed examination into the ability of the city to finance education and a study of the statutes covering educational finance convinced the committee that the community could not realize at one time the entire building program which it faced. It recommended, accordingly, a "twenty-year building program" with the approximate dates of construction of the several units and a method of financing these projects so that the city would at no time bear an unduly heavy tax burden.

The acute high school and junior high school situation was the immediate cause for action. But the committee feeling that all factors must be considered as parts of the whole situation, evaluated the seven elementary school buildings by means of the Strayer score card for school buildings. The sequence of the building projects was determined very largely by the scores

thus obtained. The program formulated on this basis follows:

SCHOOL	Year of Erection	Regular Class- rooms	Special Rooms	Grades Included
Senior High School.....	1921-22	20-25	20-25	10, 11, 12
North Side School.....	1923-25	8	1-5	Kg. 1-6
Quincy First Unit.....	1921-25	8	4	Kg. 1-6
Pinckney.....	1925-30	8	4	Kg. 1-6
Cordley Addition.....	1930-35	6-8 ¹	2-4 ¹	Kg. 1-6
Quincy Second Unit.....	1930-35	6-8	2-4 ¹	Kg. 1-6
Junior High School.....	1940	20-25	20-25	7, 8, 9
High School Second Unit.....	When Needed			

¹Size of addition only. Figures do not indicate rooms in plant to which addition is built.

This program looked toward the reduction of the number of elementary school plants from six for white children, to four, and the consequent enlargement of each plant. This change was warranted not only from educational considerations but from considerations of cost as well, the smaller plants being relatively expensive as the following table shows.

SCHOOL	Elementary School Costs Per Average Daily Attendance	Capita by Schools 1919-20			Rank in Cost
		Instruction Cost	All Other Costs	Total Costs	
Cordley.....	83	\$52.12	\$29.87	\$81.39	1
Lincoln.....	69	47.04	26.80	73.84	2
McAllister.....	93	42.84	26.00	68.84	3
Woodlawn.....	157	41.30	22.39	61.04	4
New York.....	174	38.65	21.56	58.02	5
Quincy.....	221	35.03	16.72	56.59	6
Pinckney.....	250	33.44	14.00	47.44	7

The above table shows a significant inverse correlation between the size of the building and the cost per capita. In other words, the small plants with overlapping districts as indicated in Chart I were not only lacking in many educa-

half mile for elementary school children was used as the radius of each circumscribed circle.)

The first project recommended was the erection of the senior high school and the remodeling of the old intermediate and high school plants to house the rapidly expanding junior high school. The initial step here was to determine the size of the plant needed. This was fixed at approximately 1000 pupils with an ultimate capacity of 1500 senior high school pupils.

The second step was to decide upon the number, size and type of the various rooms required. The "Cardinal Aims of Secondary Education" as outlined by the "Commission on the Reorganization of Secondary Education" formed

the starting point. These are. I. Health; II. Worthy Home Making, III. Vocational Training, IV. Worthy Use of Leisure, V. Citizenship, VI. Mastery of Fundamental Processes, VII. Ethical Character.

It was assumed from the outset that the minimum high school plant must provide adequate material facilities for the realization of each one of these aims. For the exact determination of the rooms needed, the committee used a list of sixteen types of rooms found in high school buildings—a list compiled by Prof. L. V. Koos, now of the University of Minnesota. This list includes:

I. Class and Recitation Rooms, II. Science Rooms and Laboratories, III. Manual Training Shops, IV. Homemaking Rooms and Laboratories, V. Business Training Rooms, VI. Art Rooms, VII. Music Rooms, VIII. Library, IX. Student Activity Rooms, X. Gymnasium and Dressing Rooms, XI. Locker Rooms, XII. Auditorium, XIII. Lunch Room, XIV. Administrative Offices, XV. Teachers' Rooms, XVI. Storage and Service Rooms.

A careful estimate was made of the number of rooms needed under each classification. For example, it was determined that the building must contain four science laboratories with an ultimate capacity of eight science teachers. This schedule of rooms together with suggestions concerning class of construction desired, building placement, and other general suggestions such as flexibility of construction, provision for future additions, etc., was submitted to the board's architect, Mr. William B. Ittner, of St. Louis, with the request that he prepare pre-



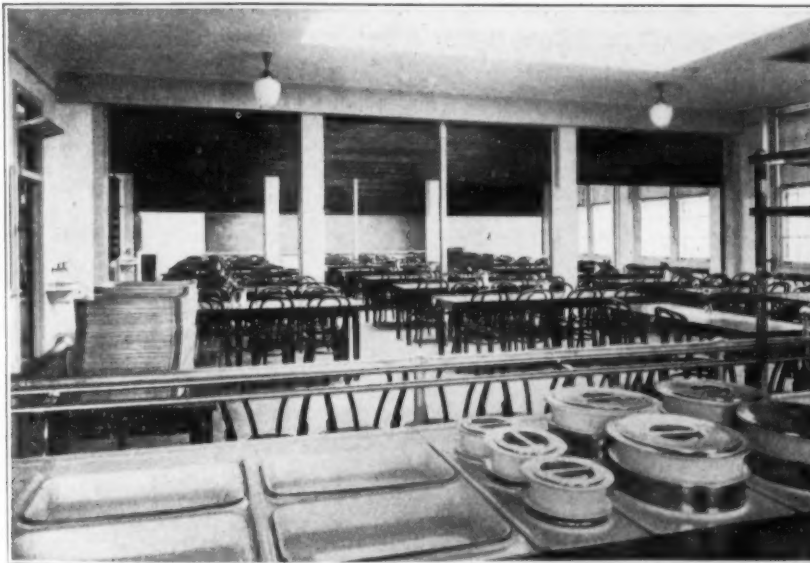
THE LIBRARY, LIBERTY MEMORIAL HIGH SCHOOL, LAWRENCE, KANS.

The Library and study space together provide accommodations for 212 students at a time. The location of the library assures its convenience for use by both the high school and community.

liminary sketches and make an estimate of cost. This resulted in so large an estimate that it was necessary to make some radical changes in the sketches. The second set of sketches, however, provided a building of the same pupil capacity, approximately 1200, which could be

built and equipped for the amount which was available under the revised statutes then in force.

Then, and not until then, the administration and the board of education went before the people with a request for an amount sufficient to



LUNCH ROOM.

The lunch room on the upper floor is adjacent to the home economics group. By means of the adjustable partition the lunch room may be subdivided at any time into areas of classroom size.



PHYSICS LABORATORY.

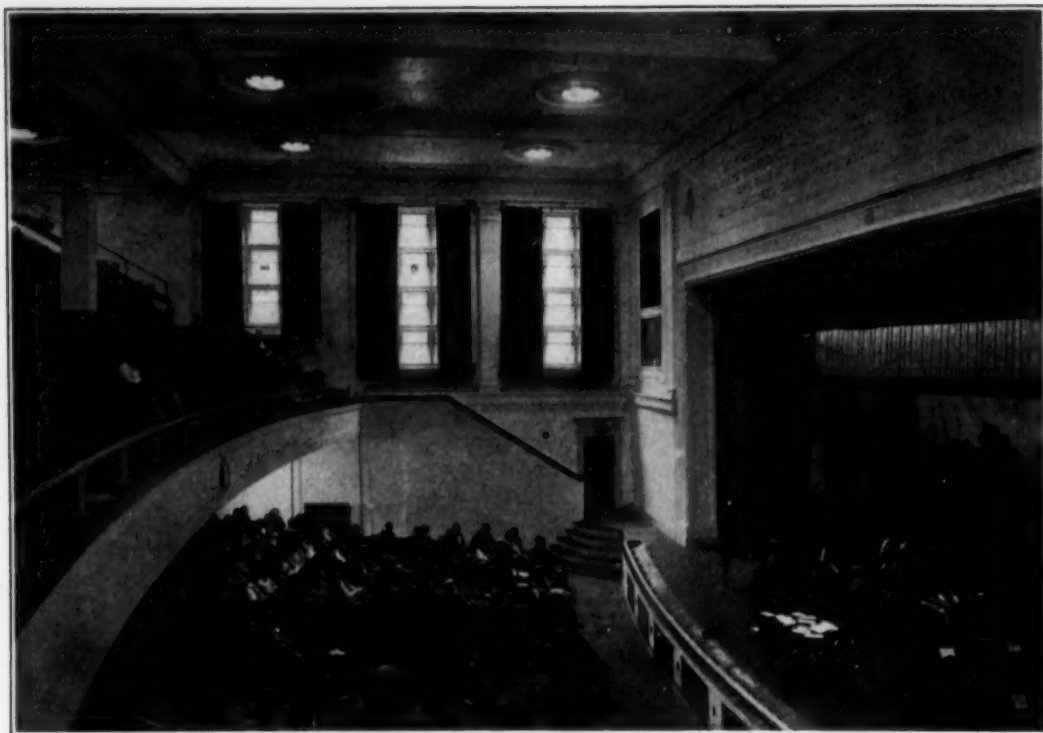
The Physics and Chemistry Laboratories are located on the second floor. The illustrations show the generous cabinet space provided, the arrangement of the student's work-table as well as the recitation chairs.



THE OFFICE OF THE DEAN OF GIRLS—A HOME-LIKE ROOM.



DINING ROOM OF MODEL SUITE IN CONNECTION WITH HOME ECONOMICS GROUP.



AUDITORIUM.

The Auditorium on the ground floor in a central location has a capacity for 1,200 students. Note the direct connection between balcony and stage by means of side stairways.

erect that specific building. Floor plans and elevations were published and distributed to every home in the city and a campaign of education inaugurated to the end that every individual might have the facts. Talks were made before the Chamber of Commerce, the classification clubs, the women's organizations

and the parent-teacher associations, and even before each church congregation the Sunday prior to election. A "catechism of the bond election" was issued and each high school child was made thoroughly familiar with every known argument for and against the proposition. The purpose of this whole intensive campaign was to

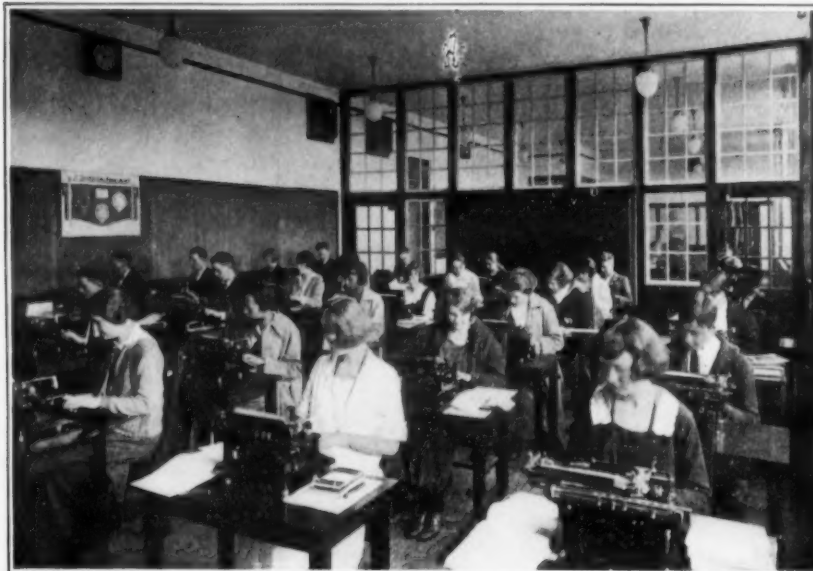
sell this particular building to the community.

The answer was given at the polls in the ratio of more than three to one when the citizens of Lawrence voted the largest sum of money that up to that time had ever been authorized in the State of Kansas for the erection of a single building devoted to public elementary or secondary education. Work was started immediately with the Liberty Memorial High School.

Owing to a comprehensive study of needs and the carefully developed educational plans the Liberty Memorial school represents a shining example of sane and lasting economy due chiefly to adaptation of building plan to the educational program. Adaptation, that is, fitting the school plant to the educational program and type of organization, the elimination of waste space by skilful planning, centralization and substantial construction are the recognized factors of sane and sound economy. The Memorial high school stands out as a "high light" in all of these essentials. It is small wonder then that the per capita cost is less than \$400. There are high schools in the country with \$1,000 per pupil costs that are not offering any greater educational opportunities to students than the Lawrence high school.

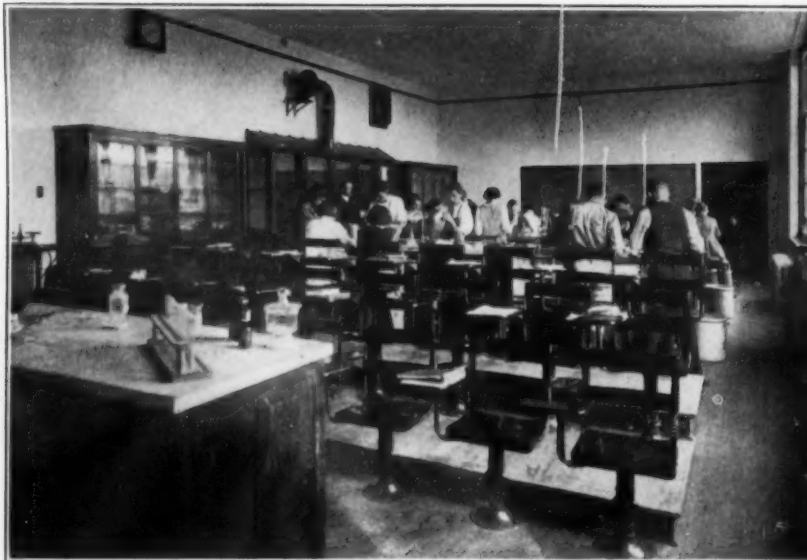
The plan of the Liberty Memorial high school is an open one affording maximum light and ventilation. It is also flexible and arranged for future extension by tiers of rooms along the opening off the rear corridor.

The gymnasium on the first floor toward the rear is a single unit but may be divided by an adjustable movable partition so that two gymnasiums are possible whenever desired. The gymnasium accessory rooms are complete with



COMMERCIAL GROUP.

The Commercial group consists of a bookkeeping room with an office and bank, rooms for commercial geography, typewriting and office practice. The bank is directly accessible from the corridor and may be used by the entire school. The illustrations show the typewriting and bookkeeping rooms of the group.



CHEMISTRY LABORATORY.



DOMESTIC SCIENCE LABORATORY.

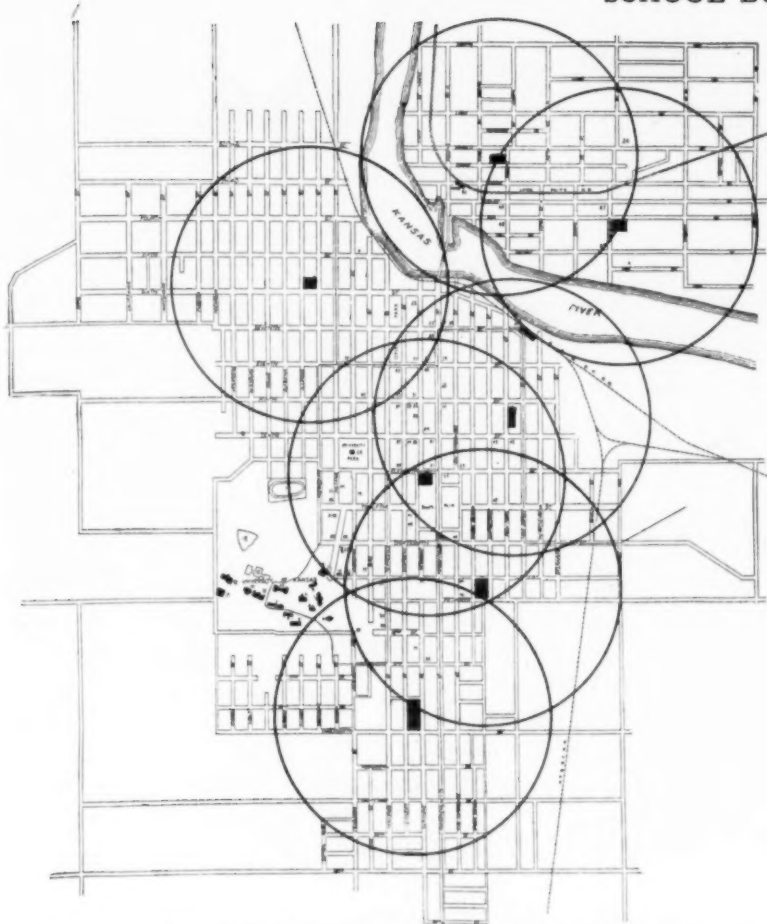


CHART I—PRESENT SCHOOL BUILDING SITUATION IN LAWRENCE. THE OVERLAPPING OF ELEMENTARY DISTRICTS, SHOWN BY THE CIRCLES, REPRESENTS WASTE.

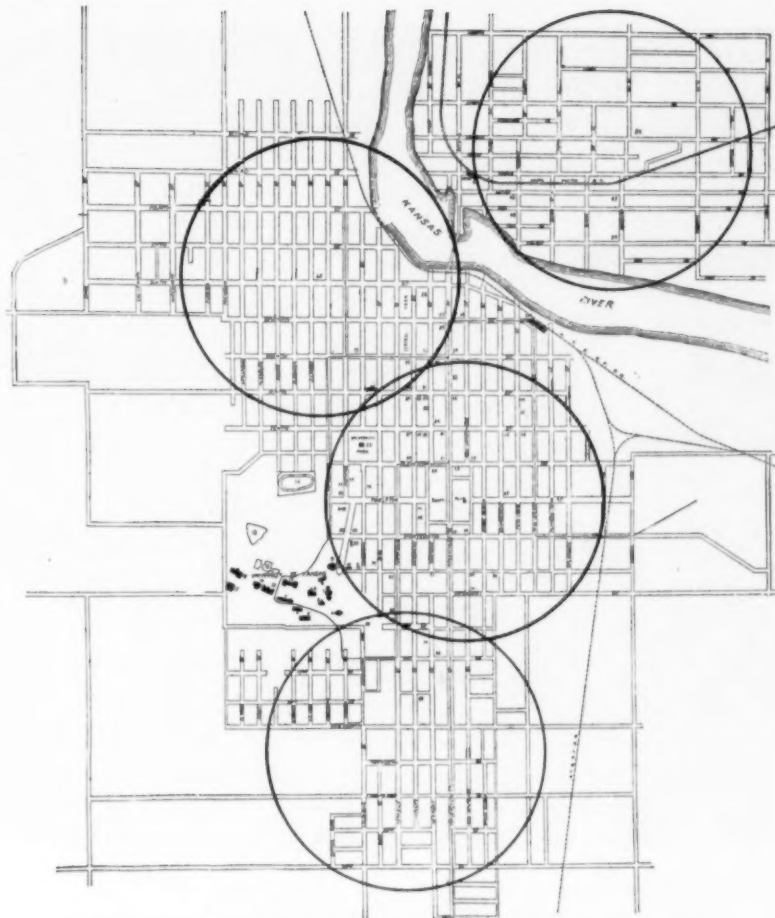


CHART II—THE PROPOSED LOCATION OF ELEMENTARY SCHOOLS—FEWER AND LARGER BUILDINGS.

lockers, showers and instructors' rooms adjacent to the gymnasium. Accommodations for visiting teams and storage space are provided immediately below on the ground floor.

The auditorium on the main axis of the building has a seating capacity of 1200. Memorial treatment within the building has been confined to the auditorium, the library and the main corridors.

The work-shops on the ground floor at the rear are planned as large areas which may be transformed into the desired shop areas by portable unit-type partitions. Owing to the frequent changes in shop instruction and activities, flexibility in shop areas has become necessary. Planning the undivided areas is therefore coming into favor.

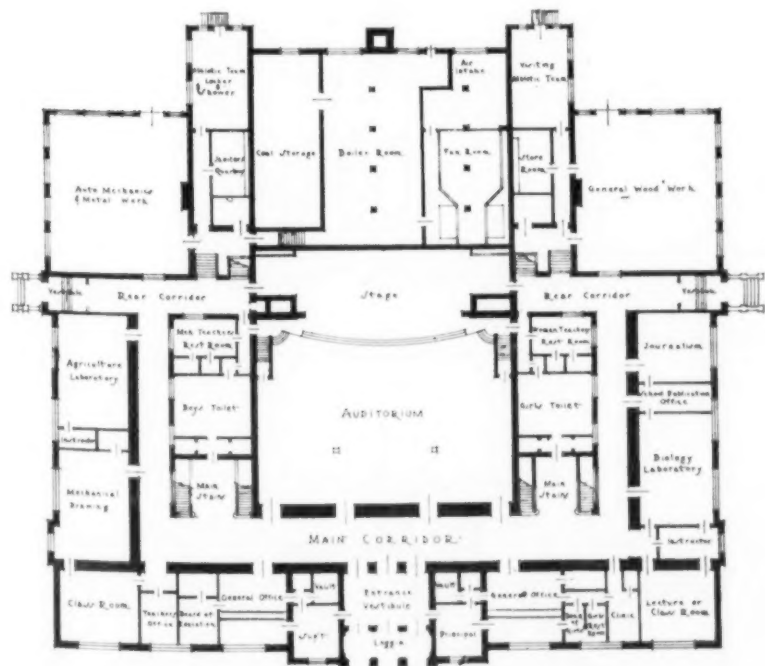
A feature of the lunch room, located on the upper floor adjacent to the home economics room is the use of adjustable partitions by

means of which the room may be divided into three smaller units at any time desired. Multiple use may thus be secured.

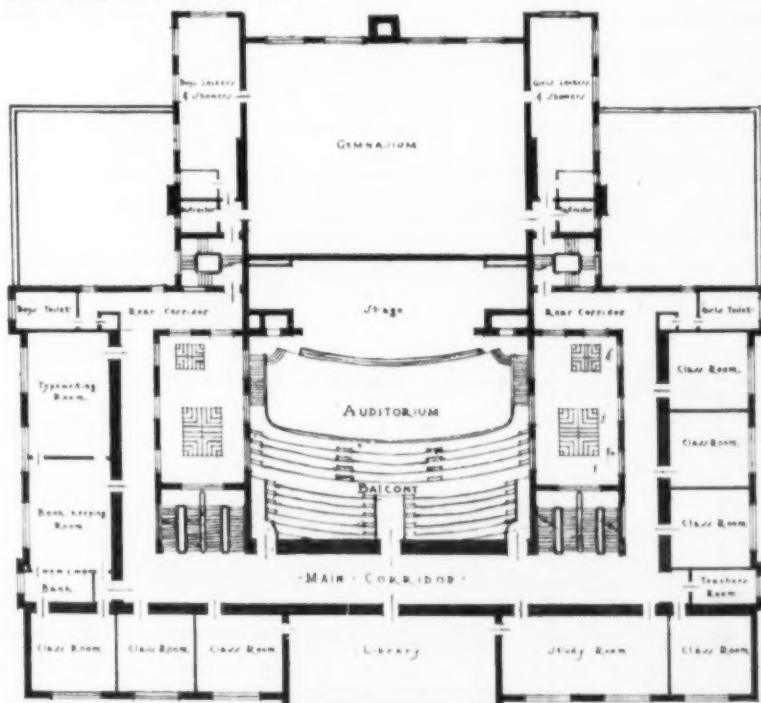
One additional factor in connection with the Lawrence high school costs should be mentioned. It is that of watching the building market for drops in cubic foot costs. Every year shows periodic fluctuations. At Lawrence the bids and lettings were regulated by the occasional drops in the building market.

In April of this year fire destroyed one of the old elementary schools thus compelling the community to face very early the second building project recommended by the survey committee. The proposition of replacing this structure was put before the people in the same manner as the high school project with the result that they once more authorized the Board of Education to proceed with the erection of a new elementary school plant. The vote on this issue was three

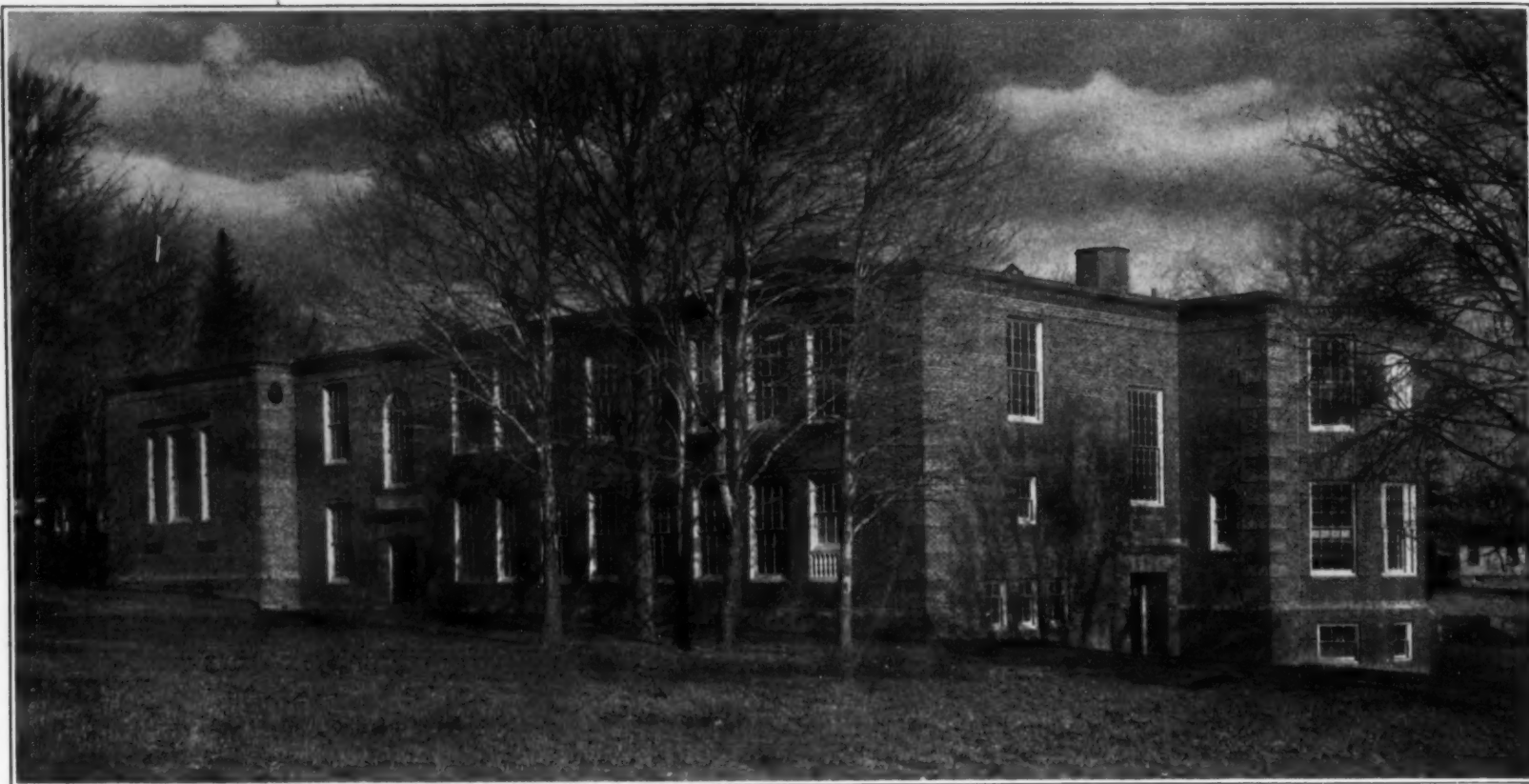
to one again. The board is now about ready to let the contracts for a strictly modern elementary school plant of the platoon type which will have an initial capacity of about 400 pupils with provisions for future additions when necessary. From time to time the patrons of the schools living in districts served by old buildings inquire about the time their schools are scheduled for replacement indicating that they, too, have in mind the various units of the program. The board of education when in session has before it a map of the city showing the "proposed plan" and the members frequently refer to the order of replacement, particularly in discussions relating to extensive repairs on buildings slated for early replacement. Thus the community as a whole looks forward to the ultimate realization of the entire program which will result in ideal housing conditions for the public school population.



GROUND FLOOR PLAN, LIBERTY MEMORIAL HIGH SCHOOL, LAWRENCE, KANS.



FIRST FLOOR PLAN, LIBERTY MEMORIAL HIGH SCHOOL, LAWRENCE, KANS.
Wm. B. Ittner, Architect, St. Louis, Mo.



GRADE SCHOOL BUILDING,
EAST BRAINTREE, MASS.

Kilham, Hopkins & Greeley,
Architects, Boston, Mass.

The Elementary Building as Seen by an Architect

Walter H. Kilham, F. A. I. A., of Kilham, Hopkins & Greeley, Architects.

The building committee for the new First District Grammar School was in session. The bond issue had been voted, the site selected, and the time for selecting an architect had arrived. A vote had been taken and the decision made to follow the modern practice and appoint the architect directly without a competition but the committee felt that possible criticism might be avoided if they interviewed a number of architects before making any appointment and they had allotted an hour apiece to several men, inviting them to appear and give the members an opportunity to look them over and "size them up."

The committee had been appointed by the mayor and was made up of seven members, five men and two women. The chairman was a leading physician of the city—big, jolly, radiating geniality and good nature. One male member was a lawyer with some inclination toward political life, and the others were business men and mechanics, picked to represent various religious and social circles. The women were earnest and intelligent. Not one had ever served on a building committee before, the city charter providing that all school building operations had to be conducted by committees of citizens appointed by the mayor instead of by the school board. Thus they approached their

work without any previous experience in building matters, a fact which at least supplied them with open minds, even if it limited somewhat their efficiency.

One architect had been expounding his views for an hour, and the committee, slightly fagged, was about to listen to the second, a man of about 45, rather grayish and with a slightly humorous glint in his blue eyes—Mr. Thumb-tack by name.

"Now, sir," said the chairman, when the perfunctory introductions had been accomplished, "we know that you have had a long experience in schoolhouse planning. We want to build a twelve-room elementary school, and none of us knows how we ought to go about it. We wish you would tell us what we should build, both in arrangement and materials, and how much it ought to cost. The hour is yours until 9:30," and he placed his open watch on the table in front of him.

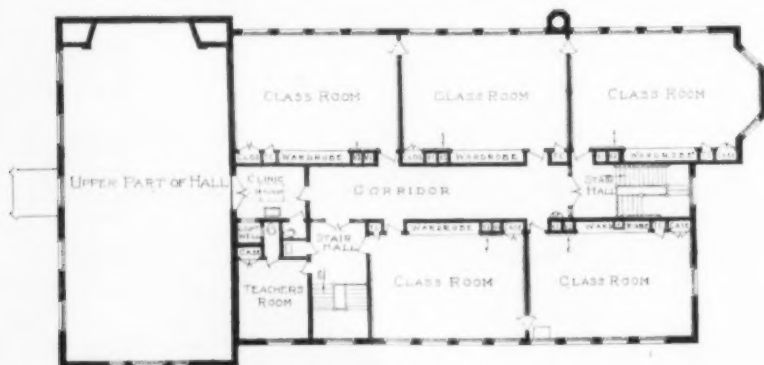
"I would much rather you would ask me questions," said the architect. "A set speech is a hard thing to deliver on a subject of this kind, and there must be some points on which you particularly need information."

"Well," said the chairman, "just to get started we would like to know whether you

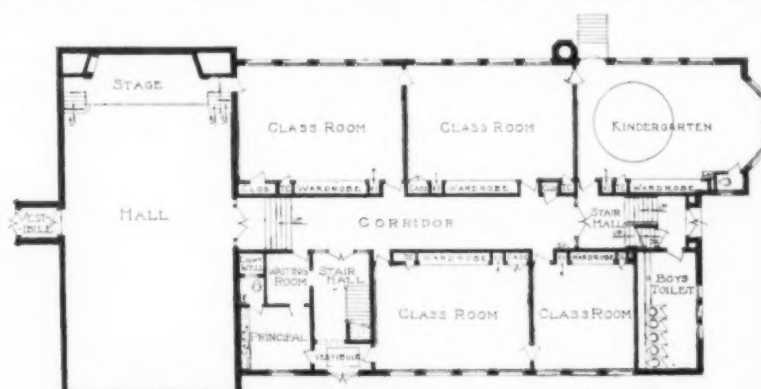
would advise a one or a two-story building and which would be cheaper."

"In a general way," the architect replied, "I should say that a two-story building, if built without a basement, will cost less and be easier to heat. Much depends on the nature of the ground, whether level or uneven. If uneven, the larger area which the one-story building will cover is likely to lead into an undue proportion of foundation cost, and there is twice as much roof and roof space to build, not to mention the trenching necessary for steam returns and so on. The walls will be twelve inches thick in either case. Of course the one-story building saves the stairs and the space they occupy, and stair climbing is eliminated, though this is somewhat balanced by the longer distances which have to be traversed in the corridors. For a northern climate I feel that the two-story building will be fully as satisfactory, and your citizens would probably like its appearance better."

"Before we go any further," said one of the women, "I would like to ask if our building must have those dreadful blank end walls of which we see so many now? I think they are perfectly abominable. Daylight is about the only thing on which the price hasn't gone up, and I



SECOND FLOOR PLAN, EAST BRAINTREE GRADE SCHOOL.



FIRST FLOOR PLAN, EAST BRAINTREE GRADE SCHOOL.
Kilham, Hopkins & Greeley, Architects.



ANDREW JACKSON SCHOOL,
BOSTON, MASS.

Kilham, Hopkins & Greeley,
Architects, Boston, Mass.

don't see why it should be shut out. Can't you tell us something about them, Mr. Thumbtack?"

"I certainly don't blame you for not liking them," replied the architect. "We find them about the hardest things to treat architecturally that we ever come across. They are caused by the theory that both the teachers and pupils should work with a side light, and neither one should face a window. This, together with the idea that rooms should have in general east and west light only, has led to filling the wall on the pupils' left with as much glass as it will take, to make up for the opportunity lost in the end wall. We are beginning to feel the unfortunate architectural effect of these walls, and some architects are finding ways to overcome it. I was in Massachusetts last summer and noticed some interesting ways of getting around the problem. There is a new school building in one town which is built in a handsome residential district where a flat roofed, blank ended building would have been out of scale, at least, and the local committee wanted a building with more the appearance of a large colonial dwelling than anything else and I brought along some photographs and sketch plans of it. You see they have introduced some wardrobes at the

front end of the rooms on one side which allow windows to be placed with perfect freedom, and they have departed enough from the rule to balance these with windows on the other side in the rear of the rooms."

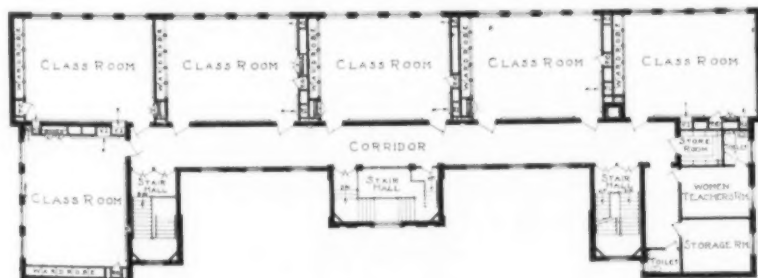
The lady who had spoken broke in with "Now, that is just what I meant, why can't we have it here? I do hate a great brick factory looking building in amongst the houses."

Murmurs of approval greeted this outburst, and the chairman said "You spoke of east and west lighting, will you tell us the reason for that? I thought that growing children needed all the sun they could get."

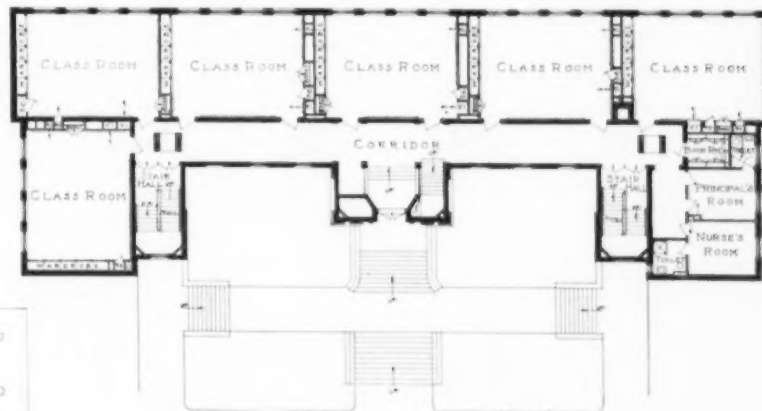
"If you have sun all day in the room," rejoined the architect, "the glare becomes very trying to the eyes. The shades have to be partially or wholly drawn, which cuts out a good deal of the light and actually makes the room too dark, and the continual adjustment of the shades is very trying. You have to remember that with the ordinary fixed desks the pupil cannot move or turn around, but is glued in one place. He will endure a glare from a polished desk or a white printed page until his eyes smart, and he goes home with a headache. If the sun reaches the room only a part of the

time, possibly even before or after school hours, as would be the case with an east and west exposure, this trouble is lessened, and the germicidal effect, if any, of sunlight is obtained, and with a north exposure the glare is entirely obviated, but many people object to the cheerlessness of a north light. Quite a few teachers that I now, however, prefer a north light on account of its steadiness, and say there is much less 'wriggling among the pupils in a room of this kind.' Of course north light is all right for a sewing or cooking room, and is almost essential for the drawing rooms, and I believe the time will come when the benefit to the eyes from a north light will receive more consideration than it does now."

"We are jumping from one subject to another a good deal," said one of the business men who had not spoken before, "and I would like to ask what your views are about constructing a school building for permanence rather than simply to put up a showy building and turn it over to the school board to take care of. I have been looking up the reports of the school committee, and I find that a good many thousands of dollars are spent every year on repairs on some of our newest buildings. Most of the repair money

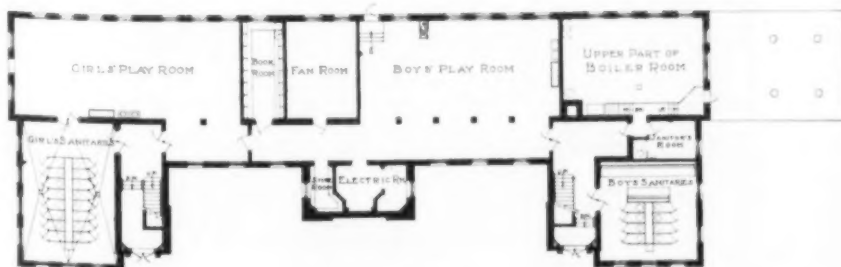


Second Floor Plan.



First Floor Plan.

FLOOR PLANS OF THE ANDREW JACKSON SCHOOL, BOSTON, MASS.
Kilham, Hopkins & Greeley, Architects, Boston, Mass.



Basement Plan.

TUCKER SCHOOL,
MILTON, MASS.Kilham, Hopkins & Greeley,
Architects, Boston.

seems to be spent in trying to make them rain-proof, but the bills for painting and repairing, plastering and floors are enormous. I went into one of our buildings only two years old the other day, and the plaster walls of the corridor and stairway had been absolutely ruined in that time, and the walls were spotted and streaked with dampness from top to bottom. Isn't there any remedy?"

The architect cleared his throat and was silent a while before replying. "Some building committees" he said at length, "are only interested in getting a building finished within the appropriation, no matter how, and having it as showy as possible. Then they say good-bye to the job and hand the schoolhouse over to the regular school board with their compliments. I know something about the building to which you refer. The winning design was presented with a brilliantly colored perspective in a gold frame. The building committee fell for a showy design and plausible talker. In order to obtain that charming English effect the roof is constructed so that most of the water goes down back of the walls, keeping them constantly damp. It is going to cost you ten thousand dollars within a year or two to entirely reconstruct the eaves and parapets so as to make the building reasonably dry. Now, as to what can be done if you will look at these photographs of the buildings we have designed, you will see that they are all of simple character—rather plain you will probably say but in twenty years we have never had a leaky roof or a wet wall. We have spent money on good copper flashings and the best roofing materials at the expense of

leaded glass and meretricious near-Gothic terra cotta ornament, and we have avoided pockets and roof valleys which hold back water and ice and cause leaks. You have to remember that in our northern climate there is nothing that Jack Frost enjoys so much as trying to see if he is able to disintegrate a cornice or parapet. He doesn't care much whether it is early, middle or late Gothic if he can year by year loosen the mortar and open the joints until the leak grows larger and larger, and finally something has to be done. I know of a fine new library building where, a few years after it was finished the entire marble cornice and balustrade all around the building had to be removed and re-laid on account of the architect's ignorance of the first principles of roof construction.

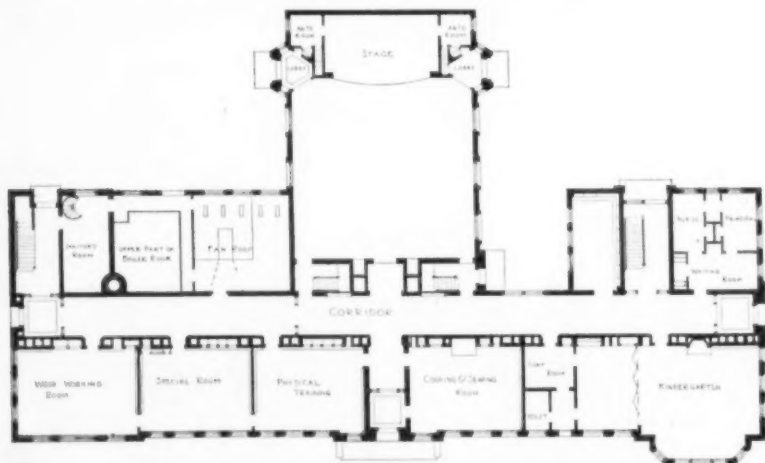
"Another matter of upkeep is the question of wall surfaces for stairways and corridors, the parts of the building that undergo the most wear and the hardest usage. Many people seem to think that there is some magic in the words hard plaster which will keep edges and corners intact in the most exposed places, and they use it for dados for all the main circulation passages of a building. Now, I hold that these surfaces so treated immediately become soiled from the children's clothing, and after presenting a slovenly appearance for a few years they have to be repainted. Besides this, the plaster even if hard gets broken, gouged out in holes, etc., and probably cracked, all of which means bad appearance and eventual repair. We always construct our corridors with durable and washable surfaces, which it is practically impossible to damage, such as salt-glazed brick

in the new light shades, or a smooth faced washable tile, and in some cases a cloth or burlap on the plaster. Any of these treatments means higher initial cost but no expense whatever for upkeep, and whenever we have built them the committees and citizens are enthusiastic.

"Then there is the question of stairs. You can use a material for treads which will wear into hollows in two or three years, or you can pay a little more and have a North River stone tread, or a concrete tread with a non-slip edge or a protected heavy linoleum tread which will last forever. There are other good stair surfaces too coming into the market which are well worth attention."

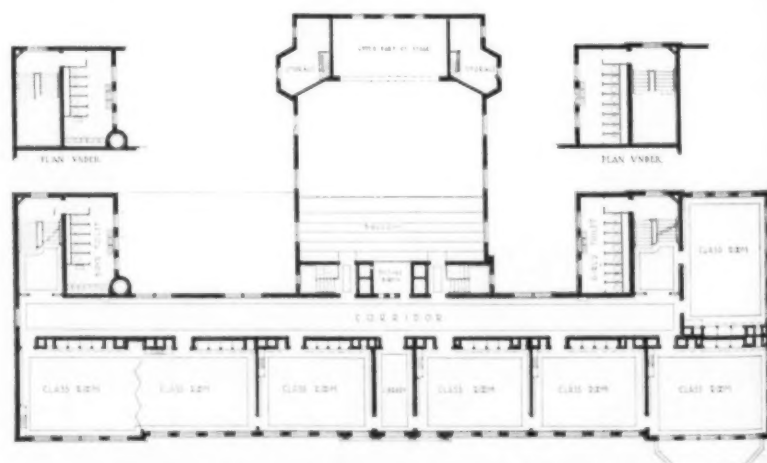
The architect paused here, a little out of breath and one of the women remarked: "I am sure we want to get a good substantial building, but those brick corridors sound terribly institutional. They make me think of a jail. I saw a school once that had all the corridors lined with bright red burlap, and there were art rugs under the windows and rubber plants, and it made me want to go to school again. I wish we could have red burlap corridors and mission furniture in this building."

This sounded like a set back for the architect, but the chairman came to his rescue by saying: "I saw one of Mr. Thumbtack's buildings in Gopher Prairie where he built these brick corridors, and they were as cheerful as anything you would ever wish. Before we decide upon an architect I hope the committee will go about and visit some recent schoolhouses. I have a seven passenger car which will be at your disposal any day. Now, it is past 9:30 and there

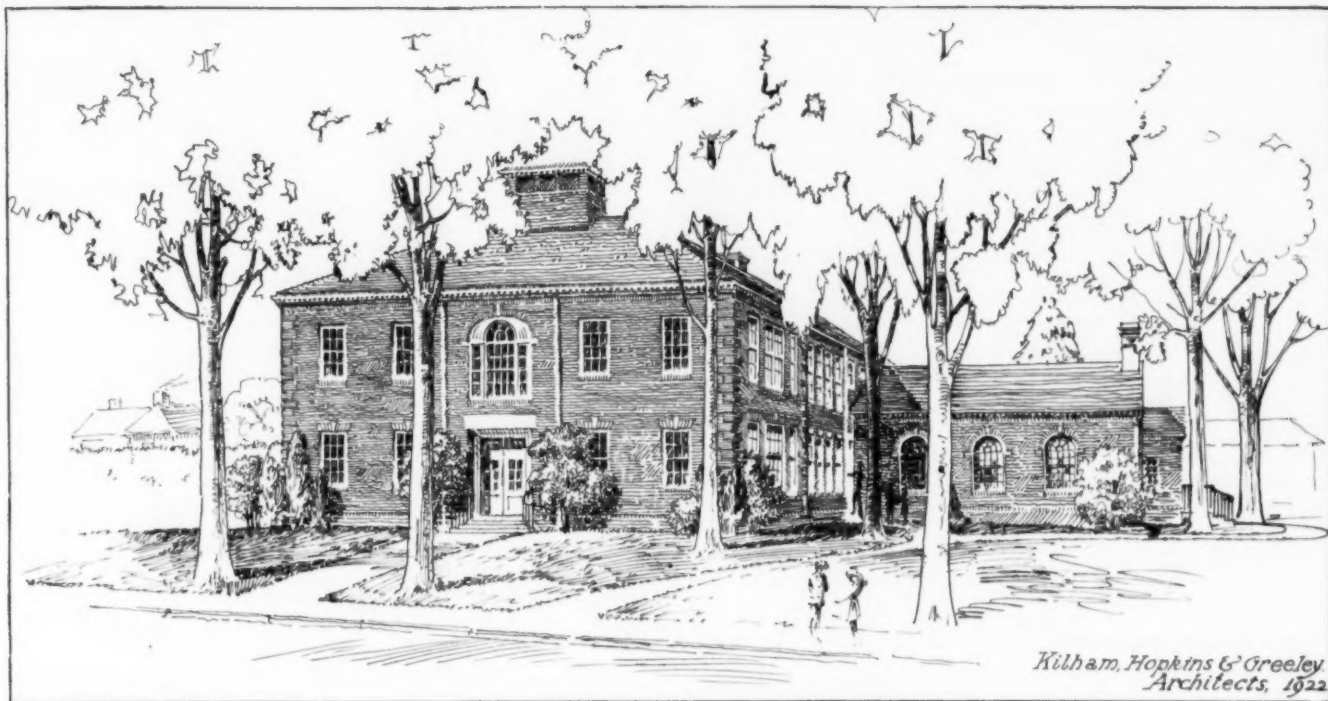


GROUND FLOOR PLAN, TUCKER SCHOOL, MILTON, MASS.

Kilham, Hopkins & Greeley, Architects.



FIRST FLOOR PLAN, TUCKER SCHOOL, MILTON, MASS.



WYMAN SCHOOL, WINCHESTER, MASS.

are two more men waiting, and I suppose they want to get the 11:15 train home. We shall have to excuse Mr. Thumbtack and thank him for his trouble."

"Wait a minute," chirped up a small committee man in the corner, who had hitherto kept silent. "How do we know that Mr. Thumbtack isn't fooling us with 'plausible talk,' to use his own words? Let's look at his work and see for ourselves how it is standing up. If he will name two or three of his buildings around here that we can visit, I move we accept the chairman's offer and go and see them next Thursday afternoon, and perhaps he will come along too. I have another car which will be available."

When the details of the trip had been settled the architect bowed himself out, passing in the ante room two prominent members of the profession who were fortified with formidable flat packages and bulky rolls of drawings, showing a degree of preparedness which was rather terrifying to our hero who had understood that no drawings would be received that night.

The next Thursday, however, found the party ascending the steps of a new twelve-room ele-

mentary school which had just been occupied and was all but completed. A few belated mechanics were putting down granolithic walks and installing the basement window grilles which had been ordered from a nearby city but on account of railroad embargoes, etc., had slumbered peacefully for five or six months at a railway junction, hopelessly lost in mis-numbered freight cars.

The architect, buoyed by the elation of creative effort exclaimed, "Here is where I really had a chance to do an open plan. The classrooms are all arranged along the southwest elevation and there is a daylighted corridor with rooms on one side only the entire length. This made the building cost a little more but the school committee felt that the airy appearance and cheerfulness of the corridors were worth the cost."

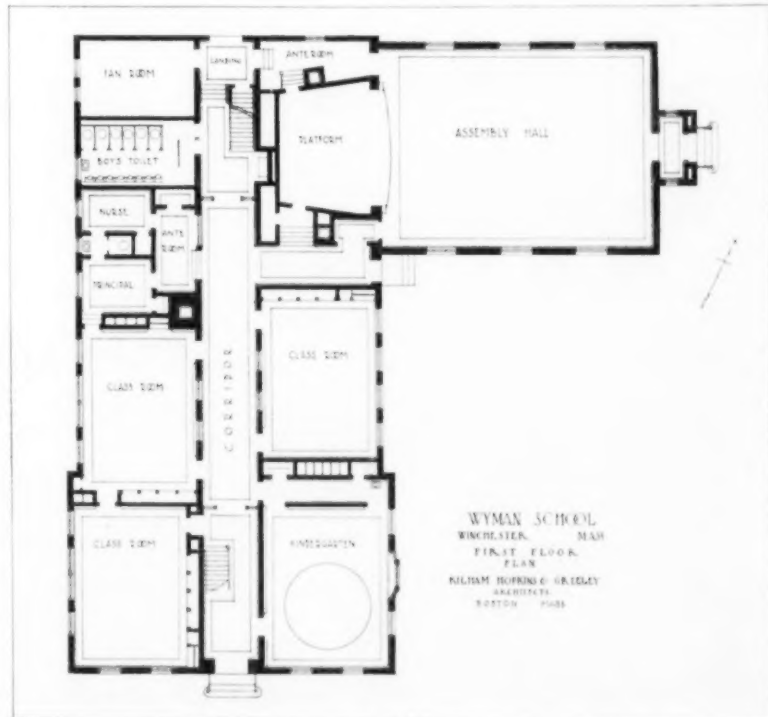
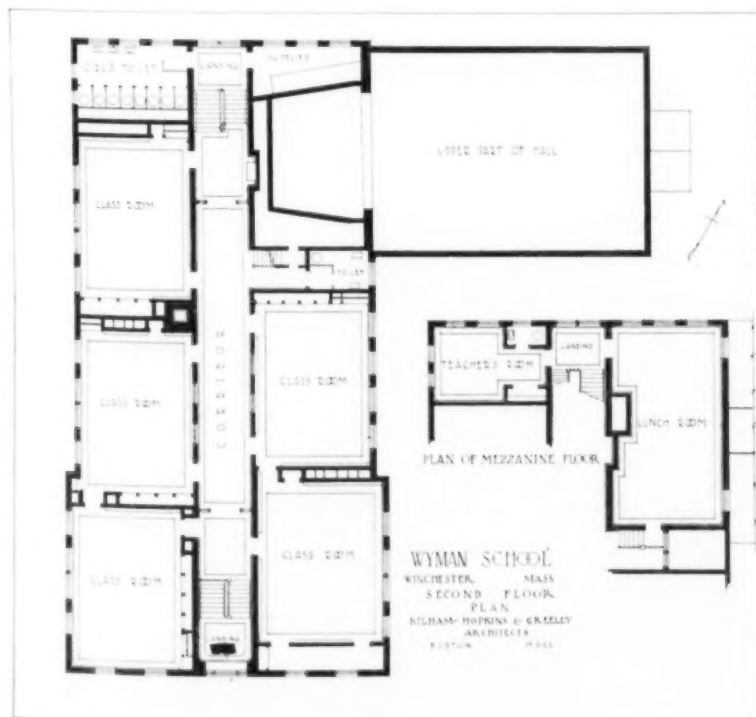
Examination of the building disclosed a dozen classrooms, each 22x30 feet, all with Chicago type wardrobes at the rear of the pupils' seats, a cheerful kindergarten, the usual rooms for administration. There was a rather competent looking boiler plant which was running with banked fires but even so was producing an

uncomfortable degree of heat in the rooms,

"This building would be a good deal more comfortable with the windows open," said one of the committee men. "It seems suffocating to me." "It does to me, too," replied the architect, "but this state requires apparatus of this amount of power to be installed, and there is no way to avoid it. In some of our buildings we have used a form of tilting sash which allows the entire window opening to be utilized for the admission of fresh air. All the teachers are crazy about it and keep them open every day, even in winter, but the janitor runs the fan just the same, and pushes all the expensive warmed air across the room and out through them. I suppose this prevents cold draughts from coming in, but the children seem to be healthy."

The party here got into the car and embarked for the next exhibit, a new elementary school of eight rooms, kindergarten, and auditorium for about 300. The last mentioned room was in a wing by itself, with a porch at the extremity for use by the general public, and looked, with its quaint many paned windows, something like the old brick schoolhouse of the earlier days

(Continued on Page 139)



FLOOR PLANS OF THE WYMAN SCHOOL, WINCHESTER, MASS. Kilham, Hopkins & Greeley, Architects, Boston.

An Interesting Rural School

The Ely, Iowa, School.

The new Ely school illustrated on this page is a small school serving the Independent School District of Ely, situated about nine miles southeast of Cedar Rapids, Iowa. The present enrollment is fifty pupils, but provision is made in the new building for 93, exclusive of the rooms for manual training and domestic science. The total cost of the building was \$18,000 or 25.3 cents per cubic foot, the cost per pupil being \$193.50.

Owing to the nature of the ground, which is water bearing sand, it was necessary to avoid the use of a basement. The ground floor is two feet below the finished grade, and contains one classroom for the lower grades, heating plant, manual training room and toilets. The first floor has two large classrooms separated by a folding partition, these rooms are used for the upper grades and the ninth and tenth grades of high school, and may be thrown together to provide an auditorium with a seating capacity of two hundred. A domestic science room and teachers' room are also on this floor.

The walls of the building are of rough textured brick with tile backing and trimmed with Indiana limestone, the stairway and corridors are of fireproof construction, and the floors and roof framing of wood, the roof being covered with asbestos shingles.

Water for drinking and sanitary purposes is taken into the building direct from a deep well by means of an electrically driven automatic pump. Sewage is disposed of by means of a septic tank and disposal field.

A steel fire escape is provided from the first floor to grade, and all exit doors are fitted with panic bolts.

An interesting feature is the mural decoration over the blackboards in each room representing scenes in the vicinity. This work was donated by one of the painters employed by the contractor.

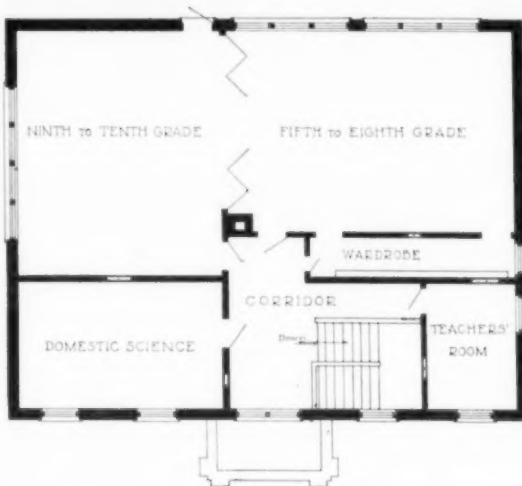
Norman Hatton of Cedar Rapids was the architect.

WHAT DEBTS MAY BE FUNDED OR REFUNDED BY MUNICIPALS?

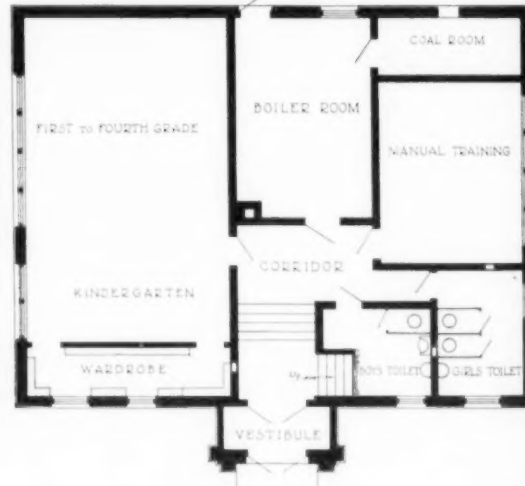
It has been judicially determined that statutory authority for the funding and refunding of debts will not be extended beyond the bounds of a strict interpretation of the statute, writes Arthur L. H. Street in the Weekly Bond Buyer. For example, it was decided by the Nebraska Supreme Court in the case of State vs. Moore, 63 N. W. 130, that a statute authorizing school districts and other political corporations to com-



THE ELY SCHOOL, ELY, IOWA. Norman Hatton, Architect, Cedar Rapids, Iowa.



SECOND FLOOR PLAN, CONSOLIDATED SCHOOL, ELY, IOWA.

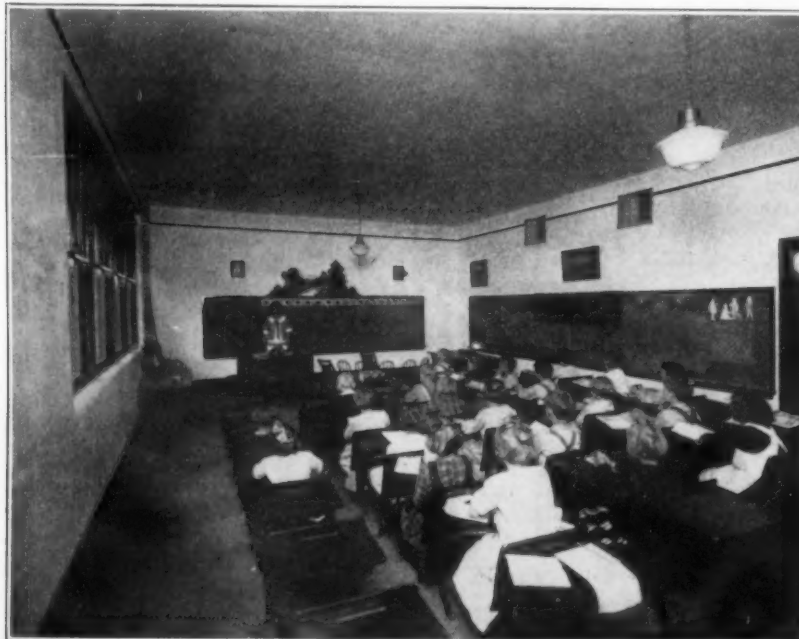


FIRST FLOOR PLAN, CONSOLIDATED SCHOOL, ELY, IOWA.

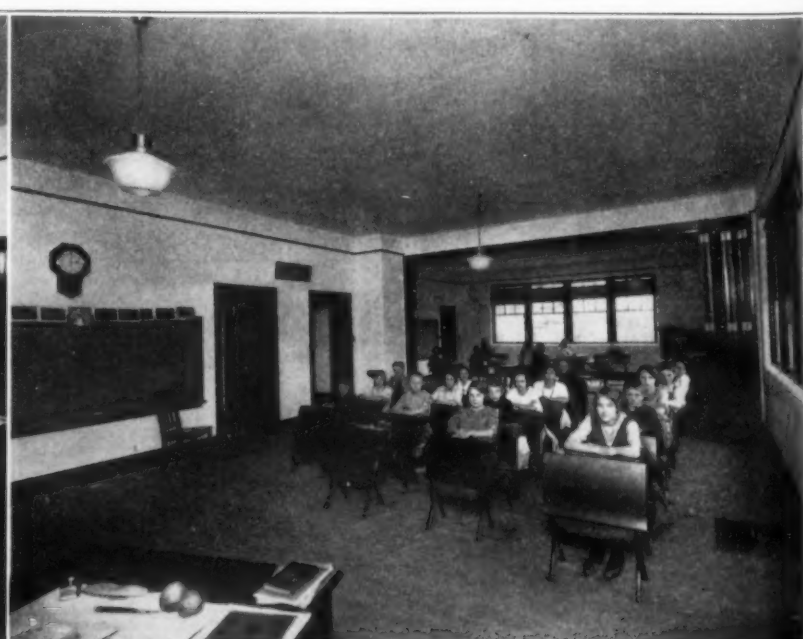
promise their outstanding indebtedness and issue "new bonds" therefor, did not authorize funding of indebtedness evidenced by warrants and orders. The court remarked:

"This statute contemplates the issue of bonds by officers of certain governmental divisions and subdivisions of our state, and necessarily carries with it a resort to the power of taxation

(Concluded on Page 144)



PRIMARY GRADES CLASSROOM IN THE ELY SCHOOL, ELY, IOWA.



UPPER GRADES CLASSROOMS, ELY SCHOOL, ELY, IOWA. THE FOLDING DOORS ARE CLOSED WHEN CLASSES ARE IN SESSION.

Foresight in School Sites

B. Ashburton Tripp, Member, the American Society of Landscape Architects, Cleveland.

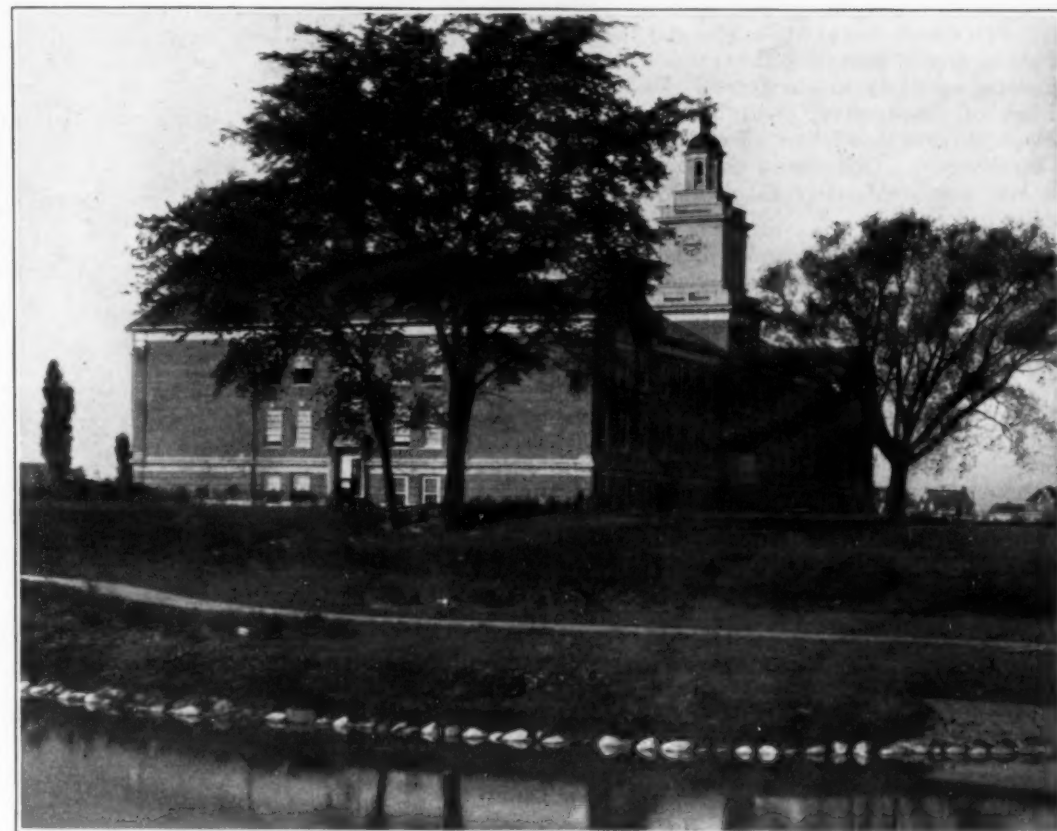
So far as the American public school system is concerned, we have but recently emerged from the age when the convenient crossroad marked the site for a school. Accident alone determined the location and orientation of the building, and in view of the fact that all outdoors was a playground, the area of the site was as limited as the members of the school committee could make it. Precedent, early established, permitted no variation, and to this if nothing more we must attribute the inadequacy of recreational space surrounding the majority of buildings that remain as a monument to that era.

This, the transitional stage, still finds us struggling with the burden of these provisions in older centers. As glaring as these examples are, our present-day unwillingness to recognize the problem of congestion, both existing and imminent, is but unloading an ever increasing burden upon the future. The solution lies in the application of foresight and intelligence in the preparation of city or regional school building programs.

In the selection of the individual sites there are certain qualities to be looked for to determine its fitness for school purposes: (1) location for its particular service; (2) size; (3) physical qualities. The following paragraphs present a brief analysis of these elements which may be of assistance to those who have the problem before them.

The Location of Schoolhouses

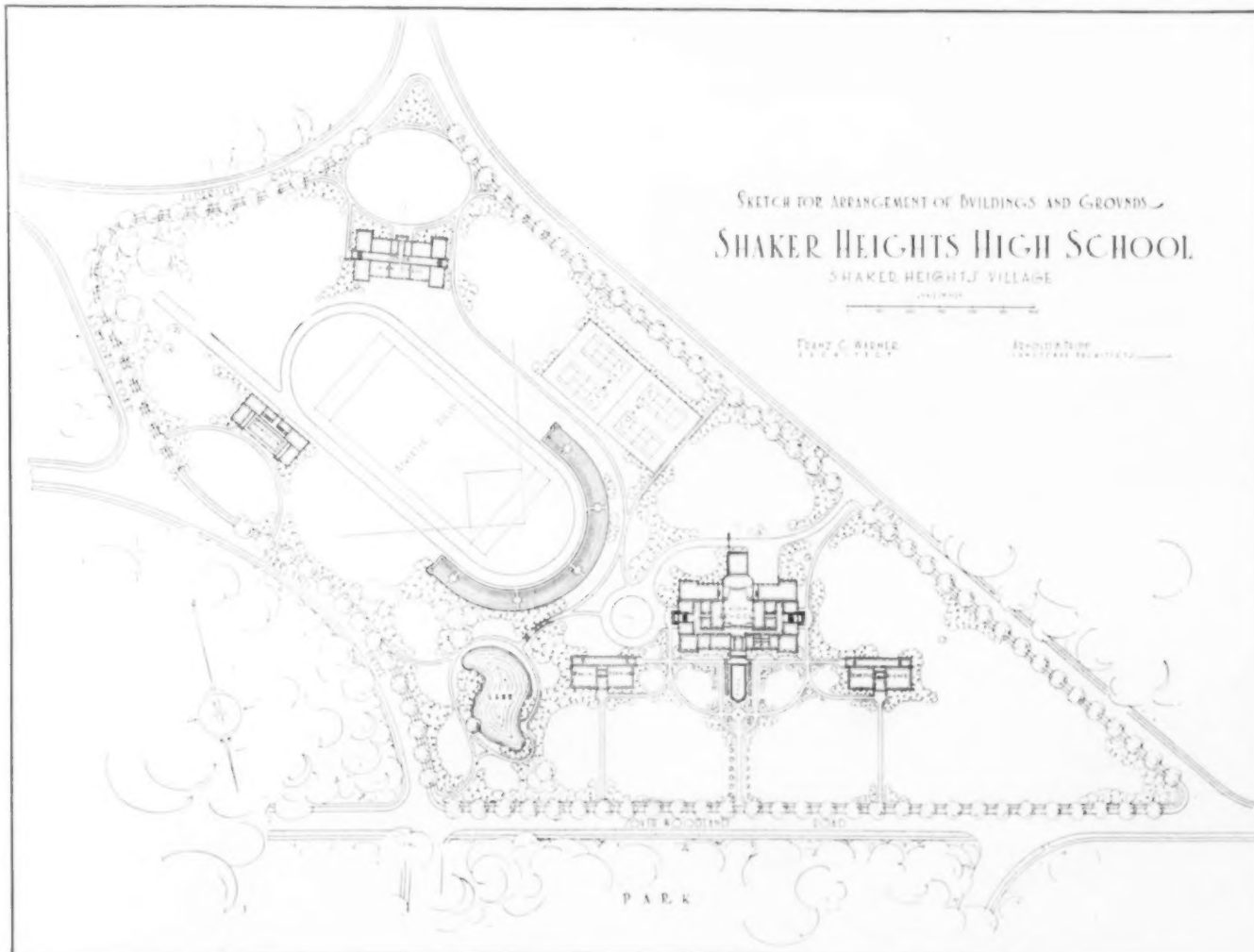
The factor of location is largely determined by the class of school which is under consideration. The elementary school should be well within the community to be served in order that the pupils may not be compelled to travel more than one-half mile to reach it. The junior high school should serve an area within a two-mile radius, while the senior high school is per-



THE SHAKER HEIGHTS HIGH SCHOOL, SHAKER HEIGHTS, OHIO.
(The building as seen from the lake.)

mitted an even greater range. This last type of school may find more advantageous locations in the open, outlying sections of the city which offer sites of ample area within reason as to cost, an item which is usually the deterrent in the purchase of large tracts well within the city. Any acquisition of land for immedi-

ate use will naturally be where transportation or other facilities are part of the service, but land acquired for future expansion of the school system in keeping with the spread of population should be located near an existing artery of travel or one certain to be projected and in the direction of residential growth.



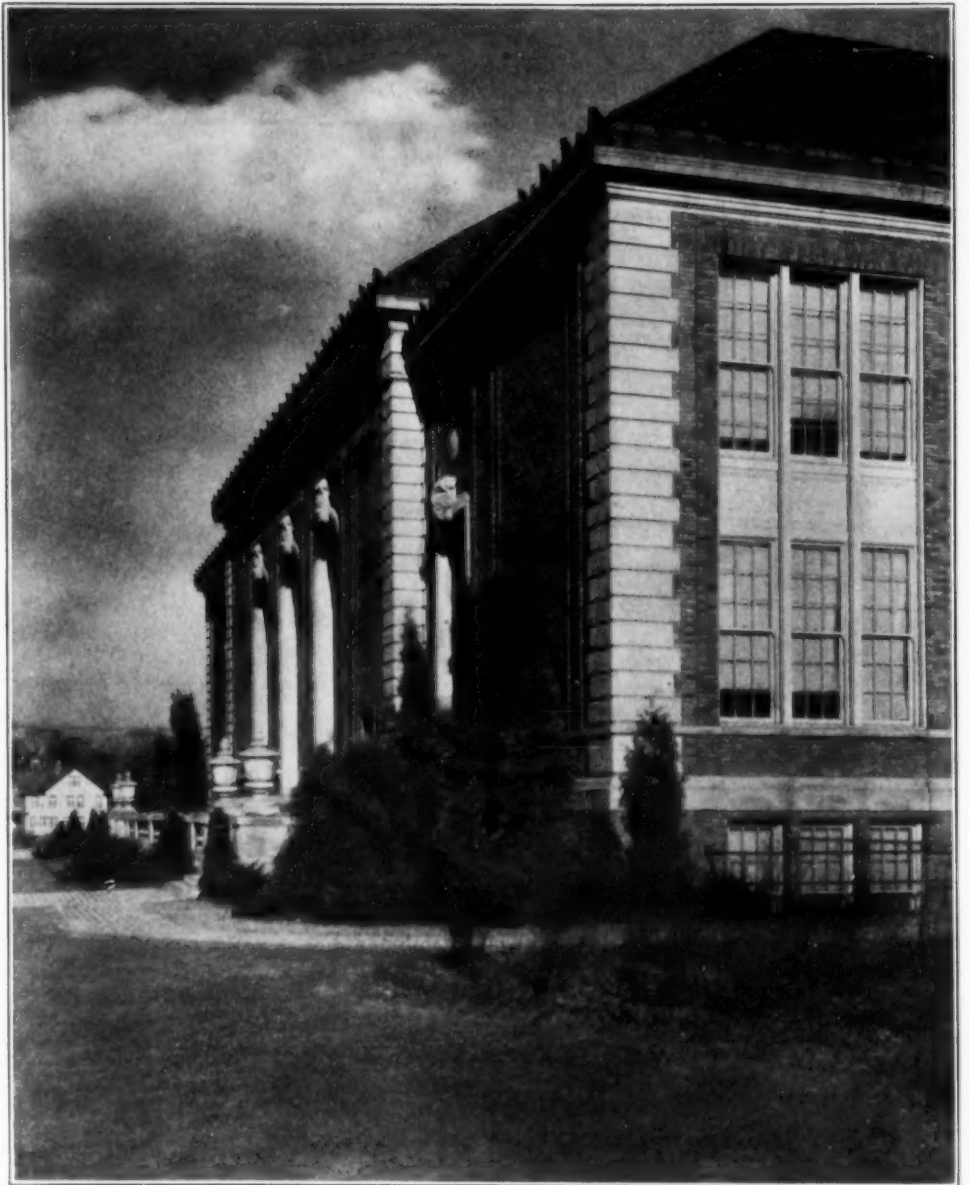
PLOT PLAN OF THE SHAKER HEIGHTS HIGH SCHOOL. Arnold & Tripp, Landscape Architects.

Given the site, the location of the building is governed by the necessity for proper air, light, drainage, and recreational areas. There may be other points demanding consideration, but these four are ever present in every problem. The school should fit the site and the site should be ample, especially if expansion is contemplated or likely in the future. Under the subject of "topography" will be shown how various physical conditions affect the economy of development. One should not be guided by the extent of area solely as quantity without quality is a liability.

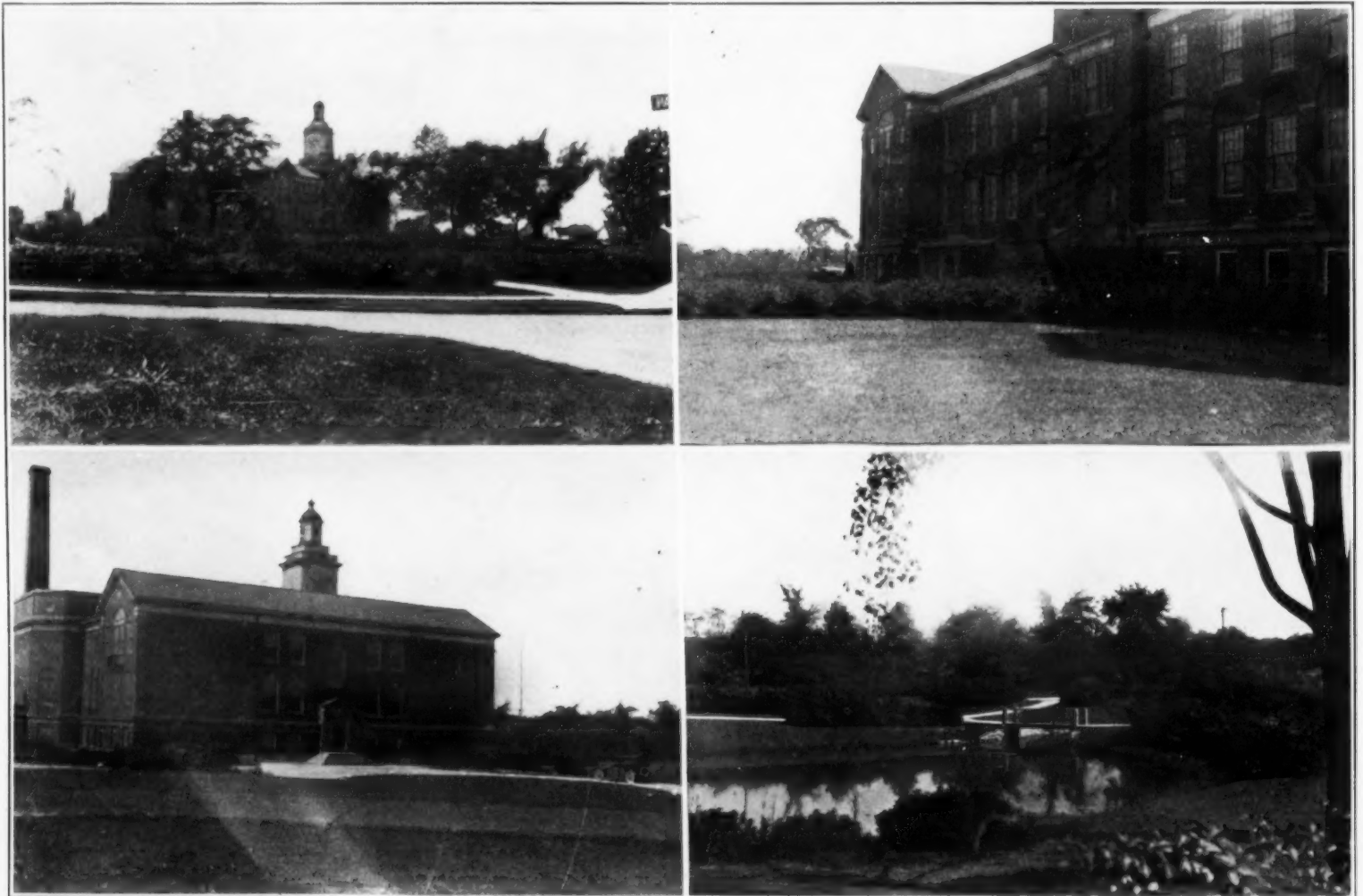
We come now to the discussion of recreational space, as important as light and ventilation in the classroom but a greatly ignored matter in the past. There seems to have been a general feeling that the street and neighboring vacant lots were sufficient for play space with never a thought for the day when the lot would lose its vacancy and the street become a crowded thoroughfare. The results of this "sufficient for the day" policy we have at every turn.

That eminent authority, Dr. Geo. D. Strayer, asserts that no less than one hundred square feet per pupil should be provided for play space with every elementary school. This amounts to less than an acre for four hundred pupils, or an area 100 feet by 200 feet for the boys and a like area for the girls. Advancing to the junior high school stage, the demands are greater due to the greater range of sports. The capacity of the school has a very natural bearing on the size of site, but five acres should be the minimum, ranging from this to fifteen acres according to requirements.

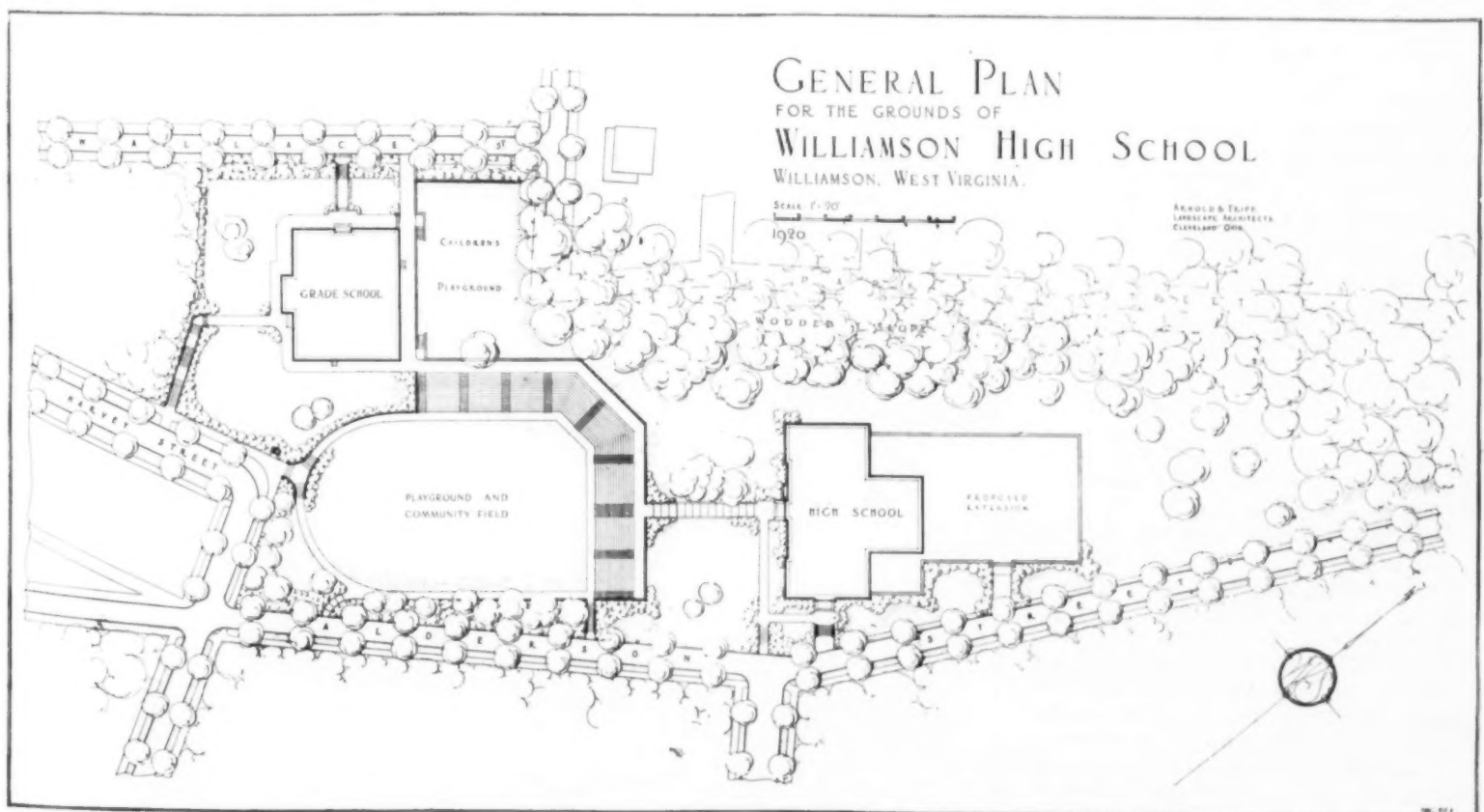
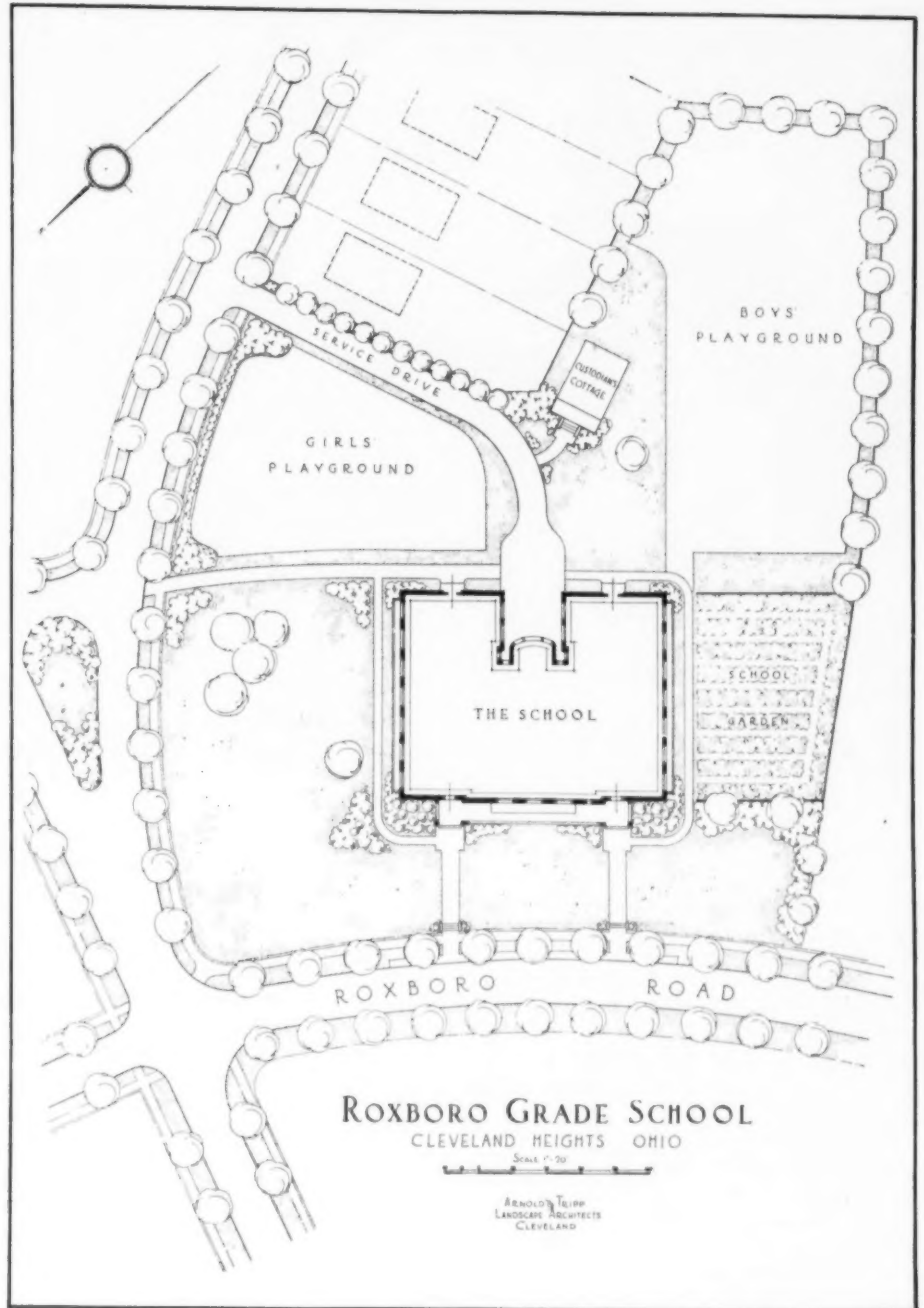
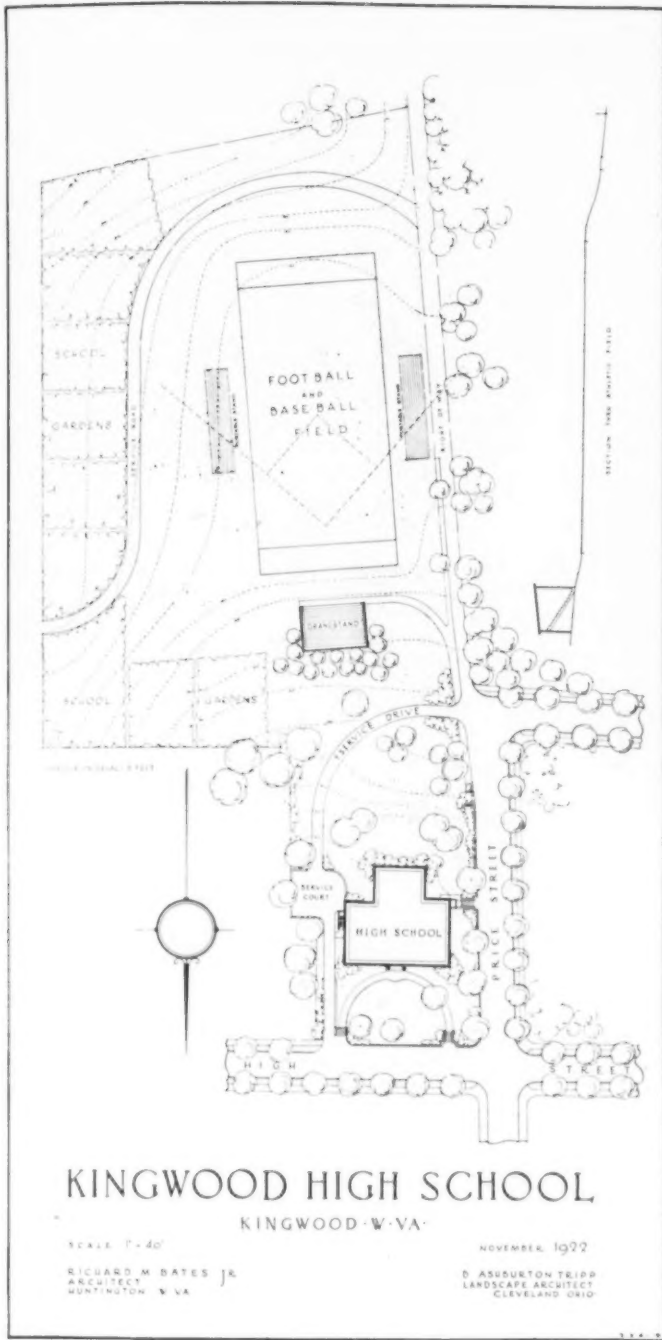
The senior high school, a still greater institution, requires a site from fifteen to 25 acres in extent. In the larger cities such acreage for high schools is practically impossible to find within the built up and well populated districts and quite beyond reason to acquire by condemnation. As has been said in an earlier paragraph, the logical alternative lies in the less densely developed zones.

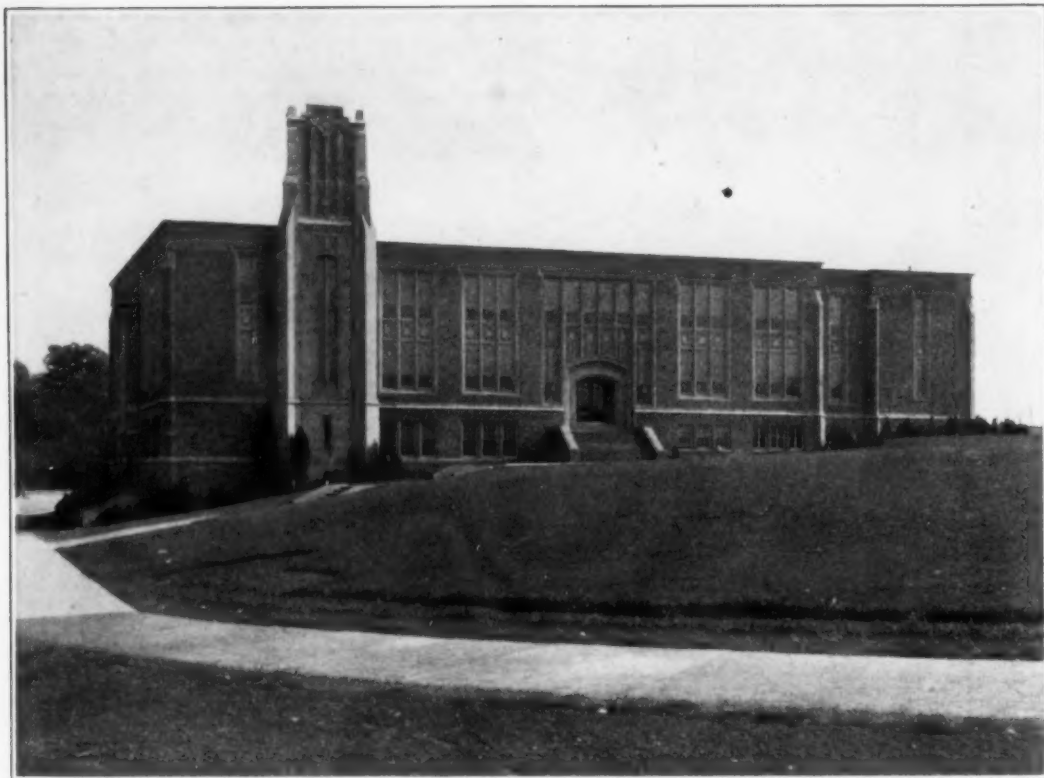


PLANTING AT THE ROXBORO GRADE SCHOOL, CLEVELAND HEIGHTS, OHIO.



VIEWS OF THE GROUNDS OF THE SHAKER HEIGHTS HIGH SCHOOL. B. Ashburton Tripp, Landscape Architect.





THE COVENTRY SCHOOL, CLEVELAND HEIGHTS, OHIO. A FEW MONTHS AFTER THE PLANTING HAD BEEN COMPLETED.

Modern city planning programs include this problem of school distribution. Their function, as a rule, is not the furnishing of complete data concerning every site, but as soon as such general recommendations appear, it should be the duty of the school board to protect its rights in the designated areas either by purchase, option or by whatever legal means that exist. City planning and zoning ordinances are the instruments which stabilize and protect the home, school and all other institutions from undesirable encroachments. Every school board should encourage the municipality to undertake the step.

Topography of the School Site

Select the tract possessing the least pronounced irregularity in contour. On the other hand, avoid the strictly level areas. Extreme irregularity and ruggedness involve a considerable expense in grading, while the level surfaces present problems in drainage. Avoid steep hillsides and descending slopes from street levels. Grading, it must be borne in mind, is an item of expense which mounts to a considerable figure in converting the surface of a site to desirable form. In many cases only skillful superintendence will prevent unnecessary rehandling of material.

Steep grades in walks and driveways are a constant source of danger, particularly in the north where winter conditions contribute to the hazard. Sharp changes in contour may be overcome by retaining walls, expensive to build, uninteresting unless handled in an artistic manner, and an excellent opportunity for some venturesome youngster to come to grief.

The topography existing around groups of trees should not be disturbed. Disregard of natural conditions under which the trees had their growth results in the trees' realization that life is not worth while.

It is not always possible to satisfy a choice in soil conditions. Sand is the least expensive and easiest to handle, besides affording natural drainage for the land. From sand through gravel, clay and rock there is an increasing scale in cost for excavation and grading. Where effective drainage does not obtain, artificial means must be provided. Obviously, when installed we have a hidden investment but one as essential for the health, convenience and economy of maintenance as any feature in the building. Extreme care should be exercised in the installation if the benefits are to be at all permanent.

Construction of Walks, Etc.

The kind and quality of materials used in the construction of walks, drives, and other elements in the design of school sites are usually determined by local conditions, availability, and cost. The main consideration is permanence, and where this is ignored, it quickly reveals itself as a run-down, patched-up attempt to keep the maintenance crew busy. It is much better to wait for sufficient funds than to cheapen a good specification. It is not within the scope of this article to discuss the all important phase of construction. Every undertaking presents its own group of problems and for that reason standardization of specifications and methods of handling applicable to any or all school ground developments would be absurd.

The tendency to imagine that the building and its site are all that enter into the cost is

responsible for the unfortunate locations, and the awkward arrangement and development of grounds so often seen. A plan of the grounds covering every detail is as essential as the floor plan of the building. In the hands of a competent designer at the outset there should be no necessity of added cost; in fact, the resulting economies will be such as no hit-and-miss system could ever attain. There is the added advantage of knowing that the final result will be an orderly and refined arrangement of all the elements. Frequently and quite generally the first budget does not contemplate a complete development of the grounds. There is then all the more reason for a preconceived plan to serve as a guide for the immediate and subsequent steps; each succeeding operation contributes without loss to the ultimate goal.

PAVILION TYPE OF HIGH SCHOOL ADOPTED

After a study of the subject by Dr. John A. Ferguson, chairman of the New York City board of education, architect William H. Gompert and Edward B. Shallow, associate superintendent, it was decided to try out the pavilion type of high school.

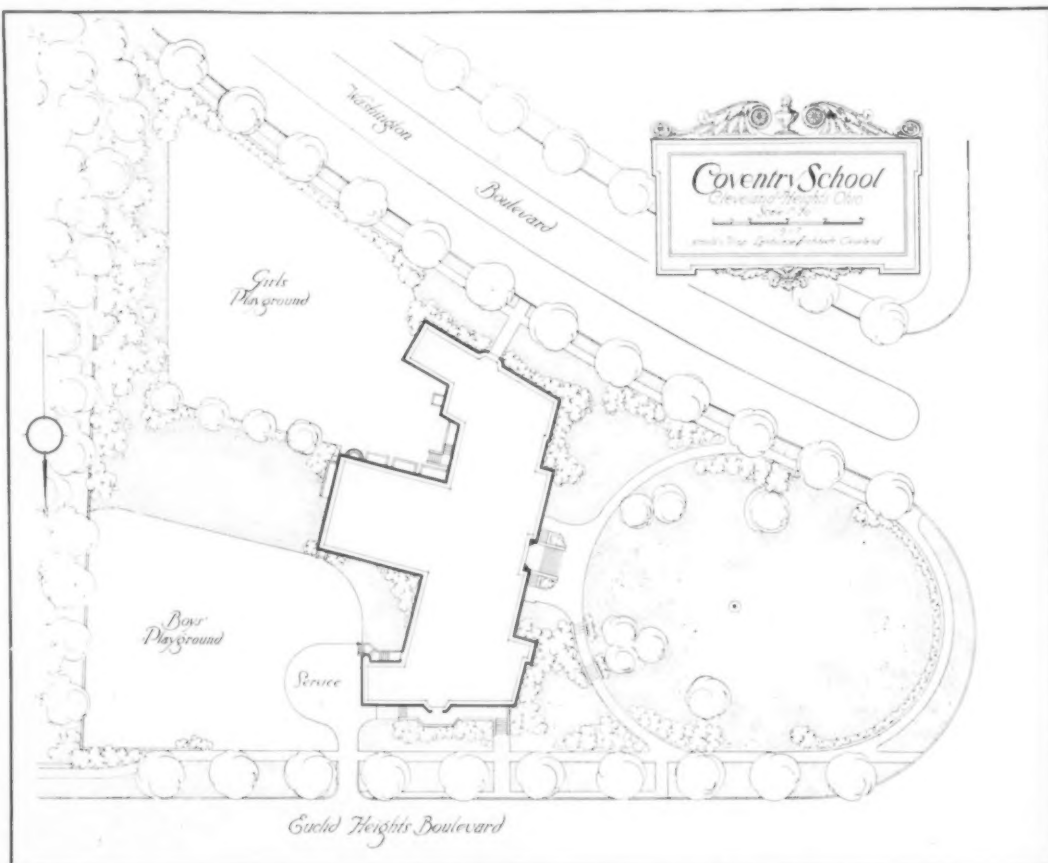
"The type we have agreed upon," said Dr. Ferguson, "calls for a central building with two wings located at right angles. This may be added to either by extending the wings further out or else building upon them.

"The plan we have decided upon is one which I believe is the most economical and promises quicker work in completing than any other. Owing to the peculiar construction in the radiating pavilion type, we believe that it is unsuited for school purposes and for this reason have decided upon the two wings and main building plan.

"We also believe that it will hold more pupils and will work out better from the educational point of view. Children will not be obliged to travel over large areas nor climb stairs. The initial type provides for a building three stories in height which may be added to later.

"This initial structure will take care of about 3,500 students, and with the additions which can be made, this number may be increased up to about 5,000 students.

"At this point I might say that despite all our plans to expedite the construction of schools, there is one great drawback. That is the clearing of the sites. We have plans all prepared, and in some instances contracts awarded, yet because the site has not been cleared we are held up."



PLANTING PLAN FOR THE COVENTRY SCHOOL.
Arnold & Tripp, Landscape Architects, Cleveland.

School Building Planning and Educational Engineering

Clarence D. Kingsley, Specialist in Educational Engineering, Cambridge, Mass.

The scientific planning and construction of modern school buildings requires: First, the recognition of school architecture as a highly specialized branch of architecture; and, second, the development of a special type of educational engineering as a phase of educational service.

Architecture includes planning, construction, and design. Many persons think of architecture as concerned primarily with design and only incidentally with planning and construction, just as many persons think of art as dealing primarily with form and color and only incidentally with function and materials. Nothing is truly artistic if function is subordinated to design. A house that is not a pleasant and convenient place in which to live becomes ugly in the eyes of the trained observer who understands the requirements that go to make a home pleasant and convenient. A store is ugly if it is not a congenial place in which to buy and sell. A factory is distasteful in appearance if the observer realizes that the workmen have inadequate light or are otherwise hindered in the performance of their work. A school is unattractive to anyone who loves children if he realizes that their health or happiness is subordinated to preconceived notions of design in exterior treatment or interior arrangements.

Consequently we are warranted in saying that planning is of first importance in architecture and that the requirements of the interior plan should never be violated in order to secure exterior effects. To be sure, the interior plan should not be developed without regard to the possibility of a suitable exterior treatment. Moreover, the materials of construction, their cost, strength, durability, and suitability, must enter into decisions as to both interior plan and exterior design. The highest skill is evidenced when plan, construction, and design are harmoniously developed and when they all facilitate and give expression to the human functions to be carried on in the building.

A Definition of School Architecture

School architecture may be defined as the science and art of creating a plan suited to the needs of youth in the process of obtaining an education and in clothing the plan with a structure that interprets to the occupants and to the community the meaning and dignity of modern education.

In the past many schools have been criticized as having a "schoolhouse" appearance, meaning thereby that they have been uninteresting. Possibly they have recalled to the beholder his own school days in which education seemed formal and monotonous. The remedy consists not in making the building more conventionalized, or in disguising its true function by making it resemble a cathedral, or a temple, or an armory, or a mausoleum.

The awe-inspiring cathedrals of the middle ages owed their majesty and beauty to the fact that the architects lived in a realm steeped in the symbolism of the religion which the cathedrals served. Similarly, the creation and development of a satisfying type of modern American school architecture will come when, and only when, the school architect is imbued with the ideals for which modern American education strives and when he is able to visualize the everyday processes by which that ideal is to be realized. The school architect thus enlightened and inspired will instinctively express in both plan and design the idea that the school is to

be a place in which children and youth are happily engaged in worth-while activities. The architect, who lacks this insight and vision, works with brain unhallowed for his task, and his handiwork cannot meet the educational needs and inspire the community and its youth with the high regard appropriate to educational endeavor.

One distinctive characteristic of modern education, as it affects high school buildings, is its comprehensive character. The comprehensive ideal of education is also reaching down to the elementary school, leading to varied activities and to specialization of rooms and equipment.

Bad Results from Lack of Understanding

Architects who fail to catch the spirit of modern education or who do not realize the importance of boldly interpreting it to the community, disregard its needs and conceal its varied functions in the buildings that they design. Gymnasiums instead of being "halls of health" with adequate life-giving sunshine and abundant natural ventilation, are almost buried under ponderous auditoriums. Home-making rooms are placed in unattractive quarters inconsistent with the American standards of living that the subject is intended to inculcate. Shops likewise are stowed away in low, poorly lighted basements where high standards of workmanship can scarcely be taught. Even the library, the architect's best opportunity for distinctive treatment, a place where culture and refinement should be expressed in every line, often relegated to small classroom units with the result that these are scantily equipped from humanity's rich store-house and are accessible only to pupils with the initiative to ask for a library pass all too grudgingly given by the teacher whose horizon is limited by cut-and-dried textbooks.

These architects cling to the square type of building, generally involving waste spaces and poor illumination and orientation, and massive but uninteresting exteriors. They copy the defects of traditional school buildings and insist upon basements often involving excessive costs for needless excavations, sometimes even involving the blasting of ledge rocks in order to burrow the school into the bowels of a cold and unreceptive earth.

Space does not permit of reference to the many important principles repeatedly violated and the innumerable essential details frequently omitted by the architects who have not given long and serious study to the needs of modern schools.

Specialization in School Work

Many members of the architectural profession are today opposing the idea of specialization in architecture just as many members of the medical profession opposed specialization in medicine twenty years ago. There is far more need for the general practitioner in medicine than in architecture. The family doctor is invaluable in an emergency or when a general diagnosis is needed; but no one ever lost his life because an architect was not around the corner, neither does one have to consult an architect to decide whether he will build a factory, or a church, or a bank, or a school.

One of the best known architects in Boston recently stated in a letter to a prominent school administrator that any good architect could learn all that is necessary about schools in a month. His point of view is evidently held by many architects who rush into the planning of

schools without serious study. These architects deserve no sympathy when their buildings are severely criticized. The most competent school architects, who have devoted years to their specialty, recognize a greater number of problems that are still unsolved than the total number recognized by the novice.

Moreover, every school building presents new problems depending upon the size of the school, the site upon which it is to be located, the funds available, and the community needs. To solve these problems, the architect needs not only originality but also varied experience in planning school buildings such as only the specialist can secure.

Specialization has received greater recognition in hospital architecture than in school architecture, in spite of the fact that schools are the more complicated. The physicians evidently have asserted their technical demands more effectively than have the educators.

Moreover, the architect who has become a specialist in hospital architecture does not rely wholly upon his knowledge of hospital requirements, but he employs as a consultant some member of the medical profession who has given special study to these requirements.

Similarly, the specialist in school architecture cannot be expected to possess all the knowledge and to make all the decisions necessary in the planning of a school building. He is rightly expected to be able to solve problems of construction and design and to plan in accordance with the stated requirements. He should not be expected to work out a school building program for a community or to formulate a schedule of rooms for a specific building, or to decide between different types of school organization as these affect the plan of the building. For these educational decisions he must look to the local school authorities, and they in turn must obtain the advice of experts in education.

Scope of Educational Engineering

These considerations bring us to the second phase of our subject. The technical educational knowledge that is needed in the planning of school buildings we will call educational engineering. What should such educational engineering include?

1. Before a specific building is planned by the architect there is needed a survey of existing school accommodations in the community and the formulation of a school building program. This program should ordinarily be made by the superintendent of schools and submitted by him to the school board. Sometimes he needs the assistance of the state department of education or of some educator who has become an expert in this type of service.

The school building program should be drafted with due consideration for the probable growth of the community and the school building funds available. It should never be made without carefully evaluating the applicability of recent developments in educational theory and practice. In particular, consideration should be given to the work-study-play, duplicate, or platoon elementary school, to the junior high school, to the six-year of the junior-senior high school, to the need for various types of vocational, part-time, and continuation classes and departments, and to community uses of auditorium, gymnasium, and library.

The building program should not only indicate the number of pupils to be accommodated in the proposed building, but also estimate the

probable and possible number of pupils to be accommodated in future additions to the building.

2. The next step should consist in working out a specific schedule of rooms needed in the proposed building. Such a schedule should give the pupil capacity of each room, the specific purpose for which designed, together with any duplicate purposes for which it may be used, and the chief equipment to be placed therein. Upon the skill employed will depend much of the economy and efficiency of the building.

This schedule of rooms should be prepared under the direction of the superintendent of schools. In a city with a large building program the immediate preparation should be the work of a division of research and investigation. In a smaller city the principal of the school should participate, but expert service and advice should be secured.

The schedule of rooms must be based upon the probable time allotments for the various subjects and the probable number of pupils to take those subjects when the school is filled to capacity. Hence the schedule must reflect the changes that should be made in the program of studies in the next few years. Moreover, the schedule should provide for contingencies due to unexpected developments in various departments. Flexibility, however, is to be secured mainly by so planning a building that necessary changes can be made at minimum cost.

Making Usable Room Lay-outs

3. The third step should consist in furnishing to the architect suggestions as to layouts for particular rooms, methods of caring for clothing and books, arrangements of administrative suites, orientation of rooms, and placement of rooms in relation to each other. Here the functions of educational engineering and of school architecture are most likely to overlap and hence the method must be that of conference rather than dictation. At this point the educational engineer will need some knowledge of architectural requirements and the school architect must be able to visualize school and classroom procedure.

An architect recently told me of an experience in laying out a science department. He followed the suggestions of the head of the science department but this head left before the building was begun.

His successor refused to accept the position unless the layout was totally revised. The architect was requested to make the changes. Before the building was completed a third man became head of the science department. He, not knowing that his predecessor had designed the science layout, blamed the architect and added that he could not have known anything about planning school buildings. The school board approved his changes at considerable cost. Of course, there was no guarantee that his ideas were any better than those of either of his predecessors.

The need for the scientific study of educational layouts is very great. Hundreds of thousands and probably millions of dollars are wasted annually because many teachers, principals, and superintendents do not know the relative values of different arrangements and do not understand space economy but nevertheless are expected to make important decisions. The development of this phase of educational engineering would not only prevent wasted funds but would also secure more efficient arrangements.

Final Criticisms for Economy

4. The fourth important aspect of educational engineering as related to buildings consists in the critical examination of the plans drawn by the architect. As a general rule, the person who prepares a plan is not able to use all

its defects and to suggest needed improvements. The conscientious architect welcomes intelligent criticism. Such criticism should be given not only by the local school authorities and the State department of education, but also in many cases by an outside expert employed by the school department for that service.

Moreover, the plans should be carefully tested to detect waste. Recent investigations by the Committee on Schoolhouse Planning and Construction appointed by the National Education Association revealed an enormous amount of waste even in the plans of architects recognized as men of ability in the planning of school buildings. The variation in the percentage of floor area devoted to instruction in 80 buildings tabulated by the committee ranged all the way from 37.53 per cent to 67.95 per cent. This variation was due largely to differences in the skill and care employed in planning. This variation means that some buildings yielded almost twice as great a return in usable area as did other buildings costing the same amount of money.

But waste in the per cent of usable floor area is not the only source of waste, and sometimes not the most serious. Building plans frequently involve rooms with wasteful and inconvenient layouts, rooms with excessive pupil capacity, and rooms that are not needed while needed rooms are omitted. Many plans are in-expansive and hence cannot be economically enlarged, many are inflexible and hence necessary changes cannot be made, many have bad orientation involving rooms with no sunlight and others with excessive glare, many are unhygienic, and still others, even though made of fire-restrictive material, do not provide for

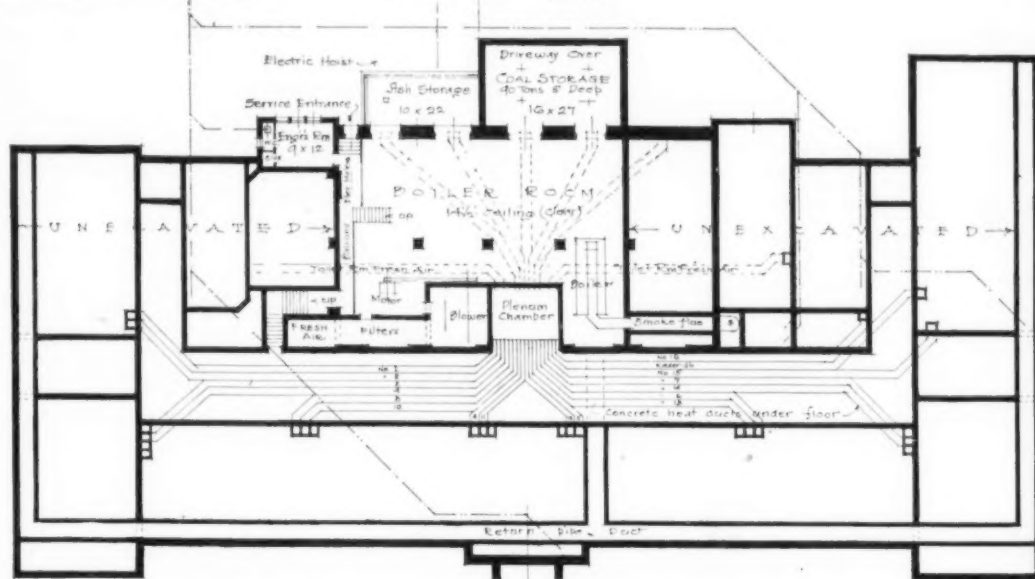
safety from panic, while still others are combustible fire-traps.

In conclusion, although progress has already been made in recognizing school architecture as a highly specialized branch of architecture, the development of educational engineering as applied to school buildings is decidedly in its infancy. While many cities employ specialists in school architecture, few cities have as yet grasped the significance of educational engineering as applied to school buildings. In fact, the principles upon which such engineering must be based are not as yet generally available. This subject lies on the educational frontier.

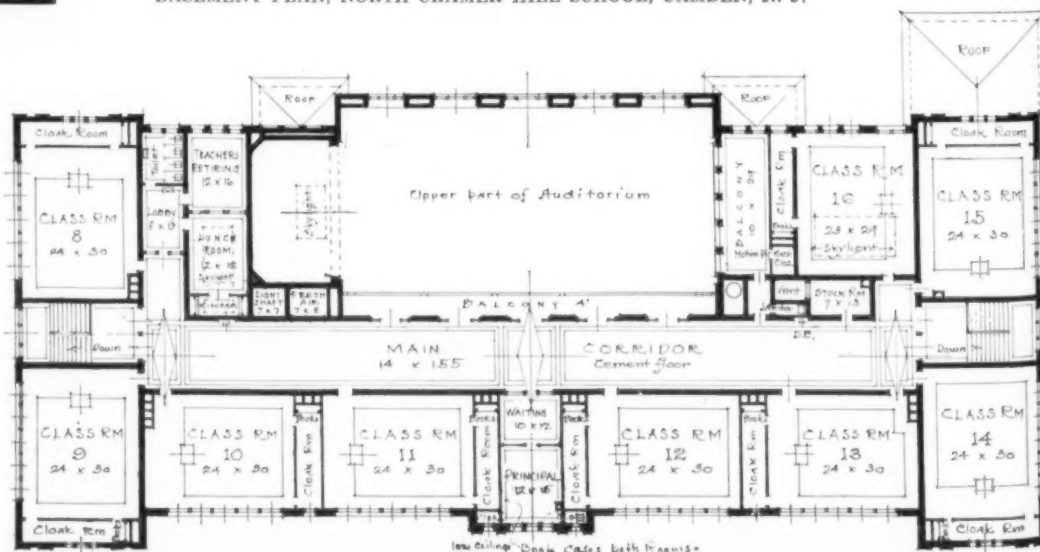
TWELVE MILLION PROGRAM APPROVED BY SAN FRANCISCO BOARD

Approval was given recently by the San Francisco board of education to the most elaborate and comprehensive citywide school reconstruction plan ever undertaken by the city, when the board approved the plans of the building committee of the board for new schools, and enlargements of present schools. The work will be accomplished with the \$12,000,000 provided by the bond issue approved by the people.

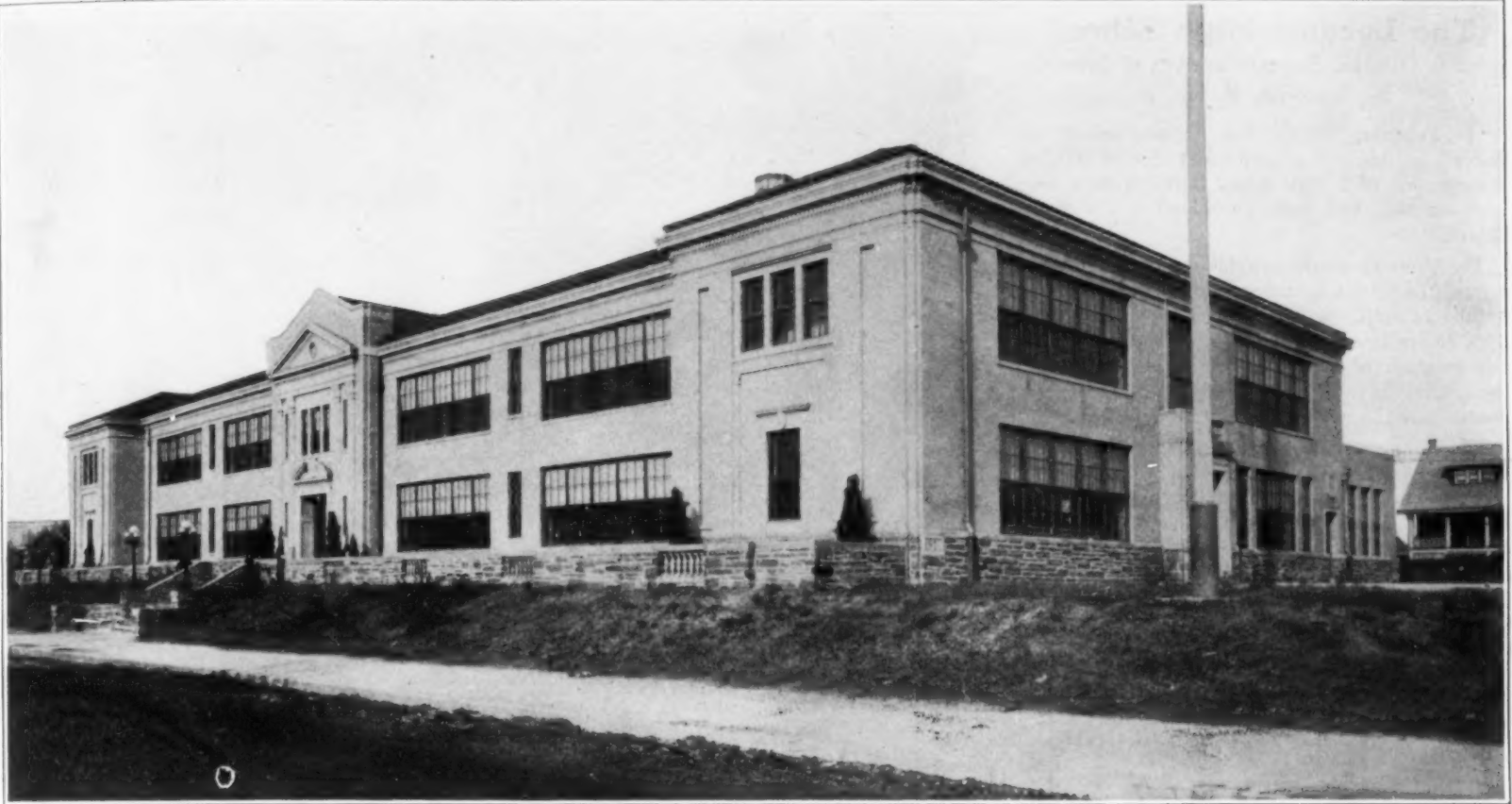
Six months ago the building committee, consisting of A. I. Esberg, F. H. Harris and Daniel C. Murphy began a survey of the city for the purpose of improving the local school situation. With the coming of Joseph M. Gwinn as superintendent of schools, he was added to the committee. It was this committee that made the report. In making its report, Mr. Esberg called attention to the assistance rendered by John Reid, Jr., city architect, the San Francisco bureau of governmental research, City Engineer M. M. O'Shaughnessy, the school department, various improvement clubs and others. The committee adopted in principle the recommendations of Superintendent Gwinn on the question of school grouping. A study and investigation of the solution of similar problems in many of the leading education centers of the country was made.



BASEMENT PLAN, NORTH CRAMER HILL SCHOOL, CAMDEN, N. J.



SECOND FLOOR PLAN, NORTH CRAMER HILL SCHOOL, CAMDEN, N. J.
Clyde S. Adams, Architect, Philadelphia, Pa.



NORTH CRAMER HILL SCHOOL, CAMDEN, N. J. Clyde S. Adams, Architect, Philadelphia.

THE NORTH CRAMER HILL SCHOOL, CAMDEN, N. J.

The prime consideration of this building has been low maintenance costs and permanency; it is of the fireproof type and all wearing parts are protected in the most modern form.

The building is constructed of concrete floors, brick walls with limestone and terra cotta trimmings to match, and a red Spanish tile roof.

The building, excepting the boiler room, is built above ground and accommodates 600 pupils in sixteen classrooms and a kindergarten of 35 pupils each.

The auditorium has a seating capacity of 600 pupils. The balconies are accessible from the

second floor. It is provided with a motion picture closet for a portable machine and full stage equipment for theatrical work. The auditorium is used as a gymnasium by removing the portable chairs with which it is seated.

All corridors, stairways and auditorium are faced six feet high with glazed brick.

The windows throughout are of counter-balanced steel sash with steel frames and bronze entrance doors and frames.

The floors are of wood excepting corridors which are linoleum.

The stair treads are alundum tile, giving an everlasting non-slip surface.

The heating is of steam with a low pressure

steel boiler and the ventilating by furnaces and blower operated by a motor.

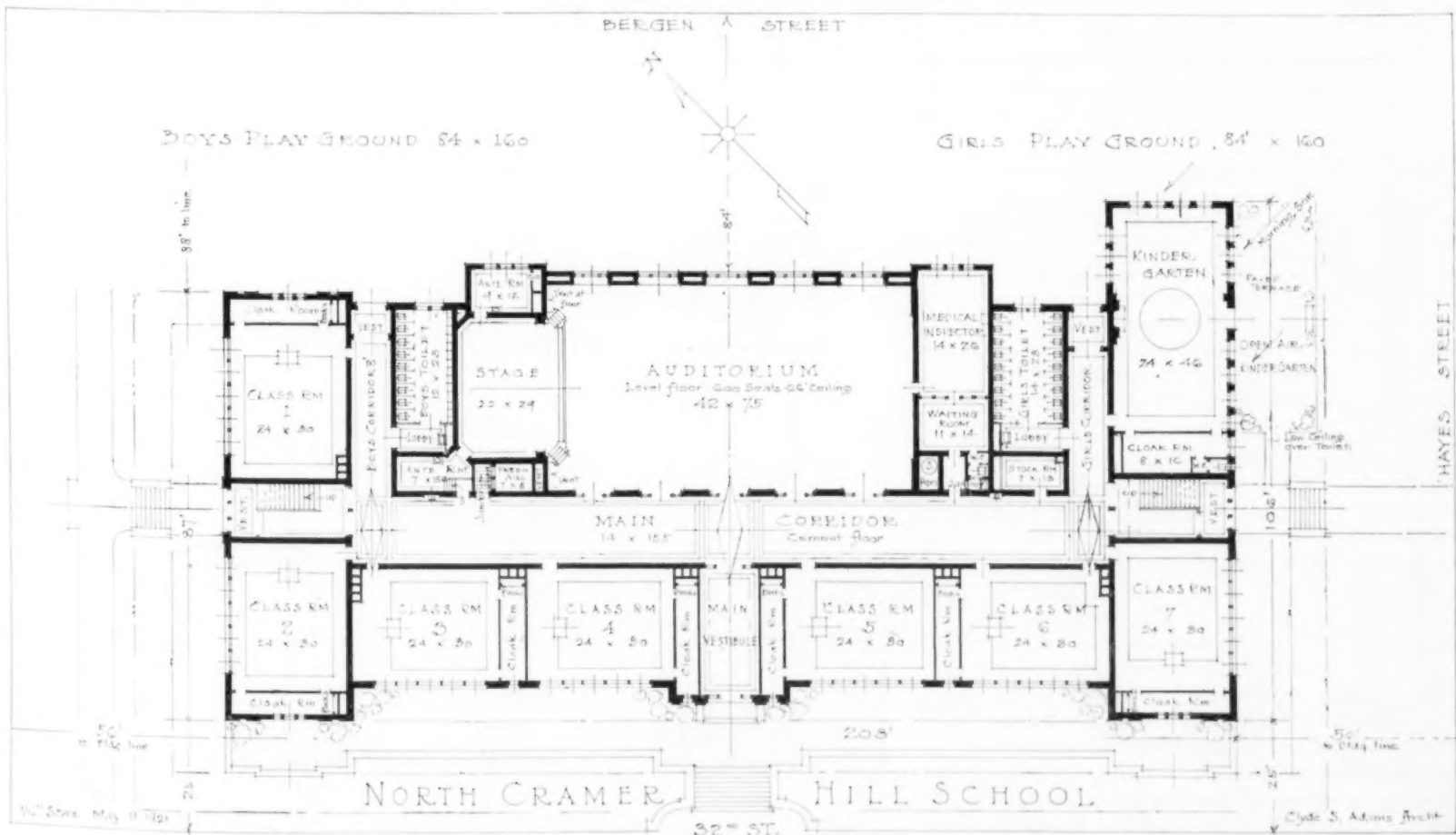
The contracts were let in November, 1921, as follows:

Building	\$196,750
Plumbing	8,215
Heating	12,377
Electric	5,980

Total cost\$226,322

The building contains 668,610 cubic feet and cost 33 $\frac{3}{4}$ cents per cubic foot, exclusive of site, planting and furniture.

Mr. Clyde S. Adams, of Philadelphia, was the architect.



FIRST FLOOR PLAN, NORTH CRAMER HILL SCHOOL, CAMDEN, N. J. Clyde S. Adams, Architect, Philadelphia.

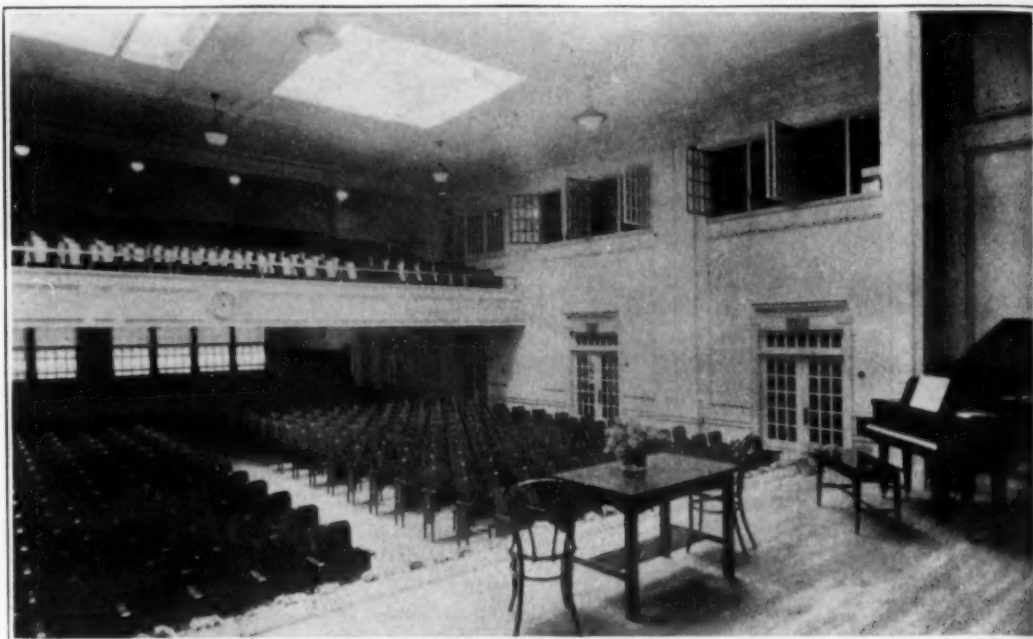
The Laconia High School

John S. Gilman, Superintendent of Schools,
Laconia, N. H.

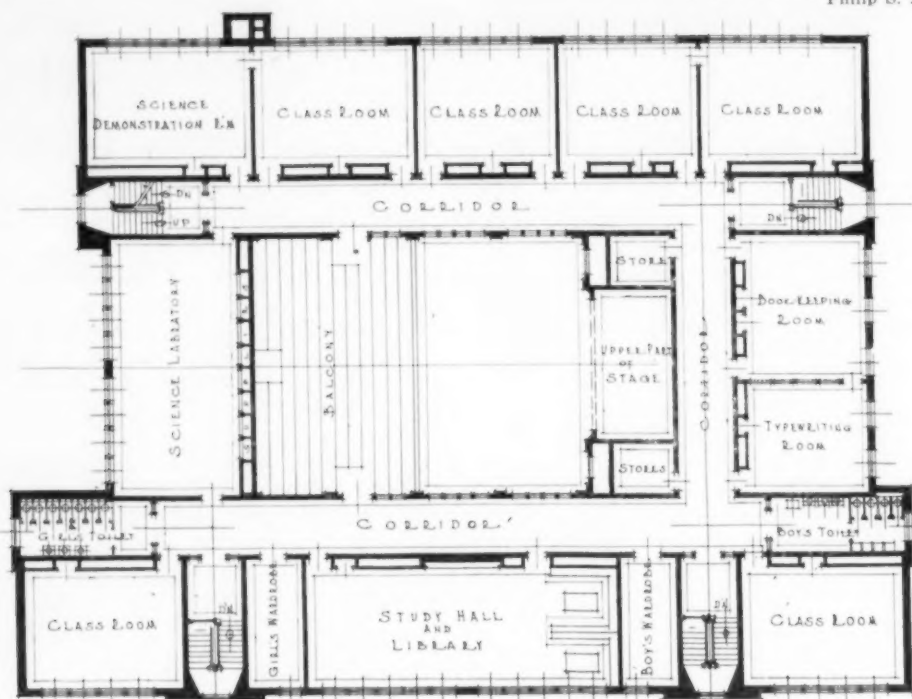
In February, 1922, the City Council of Laconia authorized a bond issue of \$225,000 for the erection of a high school building on a ten-acre lot that had been purchased a few years before.

The council made provision for a building committee of six members, three to be chosen by the council and three by the school board. This committee was made up of the mayor, and one member of the council, the city engineer, the chairman and one member of the school board, and the superintendent of schools.

The committee considered different plans that had been proposed to the school board and interviewed several architects with the result that Philip S. Avery of Boston was engaged as architect for the building. After the plans had been perfected bids were called for and the contract was awarded James W. Miles & Son Company of Worcester, Mass.



AUDITORIUM OF THE LACONIA HIGH SCHOOL, LACONIA, N. H.
Philip S. Avery, Architect, Boston, Mass.



SECOND FLOOR PLAN, HIGH SCHOOL, LACONIA, N. H.

Work on the building was started in June, 1922, and was finished in August, 1923. The total cost of the building was \$227,695.20 and the work on the grounds amounted to \$10,000, while the equipment cost \$40,000. The money for the grading was appropriated by the council from interest earned by the money from the sale of the bonds that had been placed in local banks subject to call at such times as needed. Eight \$5,000 notes were sold to cover the cost of the equipment.

The building, of colonial design, 165 feet long and 125 deep, is 200 feet back from the street and is surrounded by beautiful lawns. In the rear is a tract of eight acres that will be developed at an early date into an athletic field.

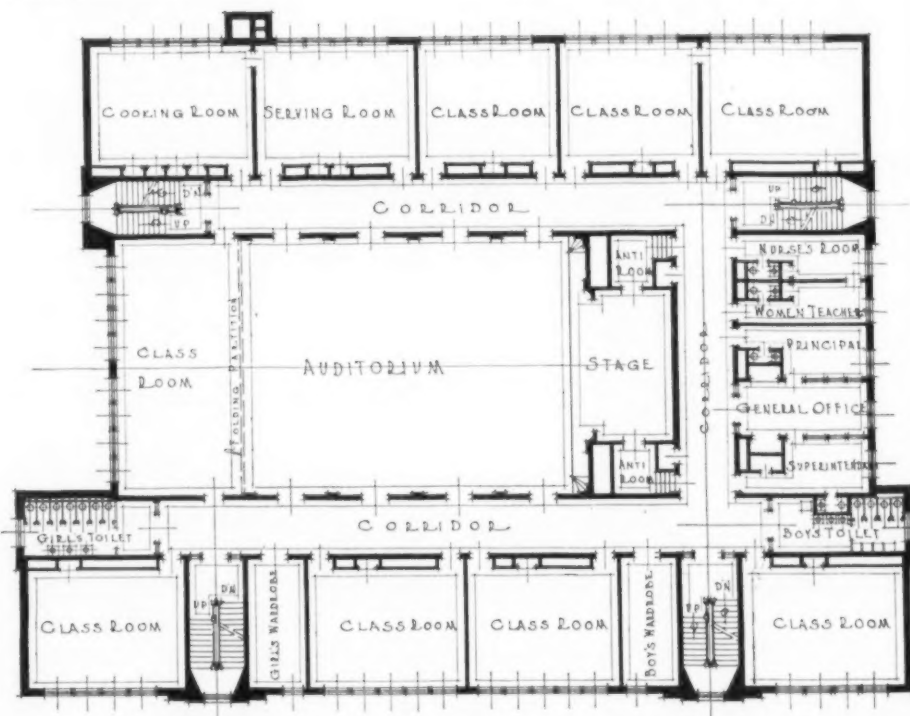
The exterior walls are of brick backed by Dennison interlocking tile. The interior is of frame construction with the exception of the four stairways, which are of fireproof construction. The finish on the ground floor is Carolina pine, while the other two floors are finished in native oak. Maple was used for all of the floors throughout the building.

The ground floor is four feet below the surface level, while the boiler room and the gymnasium are six feet lower. The boiler room is

of fireproof construction and contains two boilers. Adjacent to the boiler room are the coal pocket with a capacity of 100 tons, the transformer vault, and the ash hoist. The switchboard for the building is in a steel cabinet in the boiler room.

The gymnasium is sixteen feet in height to the girders and has a playing space 80 feet long and 50 feet wide. At one end is a balcony under which are an equipment room, an office for the physical director, and a lunch kitchen. On the ground floor level adjacent to the gymnasium are showers and locker rooms for the boys and for the girls.

On the ground floor are the mechanic arts rooms with accommodations for 145 boys at one time. In the rear are the forge room of fireproof construction, the machine shop, a finishing room, and the pattern shop. At the end of the building is the woodworking shop, and a store room for lumber. In front are the print shop, the electric room, and the drafting room. Tool rooms for the various shops are under the stairways and in closets adjacent to the rooms. Next to the drafting room is a room suitably fitted up for the men teachers.



FIRST FLOOR PLAN, HIGH SCHOOL, LACONIA, N. H.



LACONIA HIGH SCHOOL.
LACONIA, N. H.

Philip S. Avery, Architect,
Boston, Mass.

On the first floor are the kitchen and the sewing rooms for the domestic science department, and nine recitation rooms. Each recitation room in the building accommodates 35 pupils and has the usual equipment of teachers' cupboards, telephone, etc. The general office and private offices for the headmaster and the superintendent, the lady teachers' room and the nurse's room are in one end of the building on this floor.

In the central part of the building is the auditorium with a seating capacity of 806. In the rear are folding doors which make it possible to open two classrooms so that 1,100 people can be seated. Light for the auditorium comes from four large skylights and from the four double doors fitted with glass panels on each side of the room on the first floor and from windows on the second floor. It is possible to darken the auditorium so that pictures can be shown at any time during the day. The stage is twenty feet deep and thirty feet long and has dressing rooms on either side.

The laboratories are located in one end on the second floor with a lecture room near by. In the other end are the bookkeeping room and the typewriting room of the commerce department. There are six recitation rooms on this floor and the main study hall and library. All recitation rooms have east or west exposure and the proportion of windows area to floor area is approximately one to four.

Coat rooms for the boys and for the girls are located next to the front stairways on the first and second floors, while toilets and lavatories for the two sexes are in rooms at the end of the front corridors on all three floors. By this arrangement there is no waste space at the ends of the corridors. The radiators throughout the building, with the exception of the auditorium and the gymnasium, are on the exterior walls and have asbestos lined shields in front of them. Fresh air is admitted to the rooms from the windows over the radiators by means of glass deflectors. The foul air ducts are in the interior walls. The indirect system is used in the auditorium and the gymnasium.

Laconia reorganized her school system this year on the six-six plan and has at the present time in this new building 600 pupils in grades seven to twelve inclusive. With the additional facilities provided by the proposed athletic field Laconia will have a school plant in which her citizens have a right to take a great deal of pride.

—Hibbing, Minn. The board of education has decided to stand by its former decision to make the tax levy for 1924 purposes on the basis of the new census. The board was informed that it could not make a levy on the basis of the new census but that the old 1920 census must be used. A suit is threatened to determine the legality of the law governing the tax levy.



Twelve Years of School Building Ventilation

D. D. Kimball, Member A. S. M. E. and A. S. H. & V. E., Member, New York State Commission on Ventilation.

On Wednesday, January twelfth, 1912, the entire day's session of the American Society of Heating and Ventilating Engineers' Convention was given over to the consideration of the problems of ventilation and the then existing standards thereof. A widespread announcement of this meeting had brought together many Ventilating Engineers, Scientists, Doctors, and others interested in this problem. This meeting apparently marked the beginning of recent investigations and studies of ventilation, and from it came the idea which shortly developed into the New York State Commission on Ventilation (which will hereinafter be referred to as the "Ventilation Commission.")

The problems of ventilation at that time thought to require investigation were listed in a paper by the Writer, as follows:

1. Volume of air.
2. Temperature, and, 3—Variations of Temperature.
4. Humidity.
5. Air Movement.
6. Heating of the air.
7. Cooling of the air.
8. Dust.
9. Organic matter.
10. Chemistry of the air.
11. Relation of ventilation to exercise and work.
12. Method of determining the effect of ventilation and its different elements upon the individual.

Inasmuch as the above list embraces substantially the field of ventilation, and the intervening period has witnessed a most fruitful period of study and investigation of this subject, it is interesting to note and record developments during this time and to attempt to appraise the present status of school building ventilation.

Air Volume

From the earliest beginning of school building ventilation to the present time thirty cubic feet of air per minute per pupil has been the universally accepted standard of air supply. It is not by accident that there has been a general agreement upon this figure by Barry, Dresslar, Morrison, Carpenter, Allen, Woolbridge, Rafter, Shaw, Bowler, and other investigators, nor is it reasonable to assume that there has been a blind "follow the leader" method of formulating the many state laws requiring this standard. Neither does it just happen that practically every engineer practicing ventilation, seeking minimum costs of installation, has adopted the thirty cubic foot standard. Occasional modifications of this standard have been tried from time to time with a return in each case to the established standard.

Whether the volume of air supply be determined as that required for the elimination of the heat and moisture given off by the pupils, as that required to maintain a certain CO₂ standard to assure thorough room aeration, or to assure a proper air movement throughout the schoolroom, the facts point conclusively to the need of thirty cubic feet per minute per pupil.

It must be granted that a supply of thirty cubic feet of air per minute per pupil does not of itself constitute or assure good schoolroom ventilation for there are other factors in ventilation quite as important as air supply. None-the-less experience has conclusively shown that reduced volumes of air supply and failures in ventilation have gone hand in hand.

The writer, having investigated and experimented with air supplies of seven to thirty cubic feet, and having designed one hundred and fifty public school ventilating systems, has been

forced to the conclusion that in proportion as the air supply is reduced below thirty cubic feet per minute per pupil successful operation of the ventilation system is endangered. Variable temperatures, areas of high temperature, stagnant areas, insufficient aeration, odors, and general dissatisfaction are the accompaniments of reduced air quantities. No data on either experimental work or practical installations are available to show that the general application of a less volume of air will give satisfactory ventilation in the classroom. Nor with the most modern method of installation is there any substantial premium put upon a reduction of air quantities.

Temperature

Temperature is not an independent factor of ventilation but is intimately related to, or affected by, humidity, air motion, and other factors. As reported by the Ventilation Commission—

"It is quite impossible from the records of this study to determine upon one temperature as the optimum for comfort in schoolrooms. The nearest that we can come to a standard is to express it as a range above which it is usually too warm and below which it is usually too cool. The sensation of temperature is influenced by season, by weather, both existing and immediately preceding, by the previous habits of the individual with regard to room temperature, by humidity and by air movement."

None-the-less it is desirable that there should be a governing standard of temperature, and there is a clear indication that temperatures in excess of 68° are associated with discomfort, a lessened physical efficiency, and an increase in respiratory diseases, while the proportion of complaints of poor ventilation increase in company with the rise in temperature. In general the evidence is against comfort with a temperature below 68°, except in the case of window ventilated schoolrooms in which a temperature one to two degrees lower is associated with the greatest comfort. Sixty-eight degrees may well be regarded as the proper temperature standard for schoolrooms. The Ventilation Commission declares, "that 68 degrees is a critical temperature as regards both comfort and susceptibility to respiratory disease."

Variation of Temperature

Undoubtedly a literally unvarying temperature over a long continued period lacks the stimulating and invigorating effect of a variable temperature, but whether during the period of a school session any greater variation in temperature than that customarily found is necessary or desirable may be questioned. The automatic temperature control thermostat customarily employed in schoolrooms serves to control the temperature within a range of two degrees (one degree above and one degree below the point at which the thermostat is set) and this seems to be as great a variation of temperature as is satisfactory. Any greater variation in temperature than this should be to a lower temperature for a brief period and may well occur during brief calisthenics periods with open windows.

Humidification

The most exhaustive study of this subject recorded is that made by the Ventilation Commission, which is treated in detail in the report of the Commission. The first experiments along this line were extensive and carefully controlled laboratory experiments. The resulting conclusion of the Commission is expressed as follows:

"With regard to the problem of relative humidity, it is obvious that a high moisture content combined with high temperature must always be harmful, since the effect of a humid atmosphere is to decrease the heat loss from

the body by evaporation. The specific harmful influence of unduly low humidity which has been postulated by various writers upon ventilation has, on the other hand, not been apparent in our investigations."

The Commission found nothing to substantiate the oft-repeated assertion that a dry atmosphere makes for nervousness.

An equally elaborate and carefully controlled series of experiments in schoolrooms with and without humidification were later carried on, the result of which is thus summed up in the words of the Commission:

"It is clear from these results that the difference in atmospheric conditions between the dry and humidified rooms exerted no appreciable effect upon the mental work and progress of the children."

"No significant difference was apparent in the physical development of the two groups or in the proportion of physical defects observed at the beginning and end of the experiments."

"From such information as is available in this study, there is no indication that humidification lessens the prevalence of respiratory illness."

On the other hand nothing was developed by the Ventilation Commission to indicate anything harmful in humidification so that the matter may be said to rest upon personal choice or opinion until some scientific data can be produced to substantiate the claims of the harmfulness of dry schoolroom air, or, of the benefits of humidification.

Available data indicates that approximately half of the school buildings erected during the last five years have been provided with means of humidification.¹

Air Movement

That literally still air, regardless of its chemical and physical qualities, makes for discomfort within a short period of time is now a thoroughly established fact. Any portion of the schoolroom in which there is no movement, or practically no movement, of the air quickly becomes a "stagnant area" and uncomfortable. Air motion, within the limitations of "drafts," is essential for the removal of the heat and moisture eliminations from the human body. It was demonstrated during the work of the Ventilation Commission that it was possible to move even thirty or more cubic feet of air per minute per pupil through a classroom uniformly but so slowly as to arouse frequent complaints of dullness and stagnation. The method of introducing and exhausting air into and from the schoolroom, with the location of fresh air and exhaust registers, to which reference is later made, therefore becomes an important factor in a school building ventilating installation.

It is the presence of this element of "air movement" that is frequently referred to as "life" in the air in a well ventilated room, air movement that is still not a draft, for drafts must, of course, be avoided. Nothing in ventilation is now regarded as more essential than air movement. This and a properly controlled temperature are, indeed, the two most important factors in good ventilation.

Heating of the Air

It is no longer contended that air clean enough to be used in the ventilation of a schoolroom may be rendered in any degree less healthful because of being heated to the temperature required for ventilation purposes, that is, by coming into contact with metal surfaces containing low pressure steam as used in school building heating.

Cooling of the Air

This subject does not enter into the field of schoolroom ventilation, but specifically relates to the industrial field and to auditoria occupied

¹Study now in progress by John R. McLure.

during the summer season. Theatre cooling installations are developing rapidly.

Dust

There is no more justification for using dusty air for ventilation purposes than there is for using dirty water for drinking purposes. The air should be clean at all times. It is a matter of decency in the schoolroom just as is bathing with the individual. None-the-less it is clear that the relative importance of dust in the schoolroom air has frequently been over-emphasized. The air in the average home of the careful housekeeper contains dust, but such dust is of an entirely harmless nature. Air of a similar quality used in the schoolroom ventilating system is equally harmless.

That the best and cleanest air available should always be used for the ventilation of the schoolroom is manifest, and therefore the air supply should never be taken from, or from the direction of, a street, driveway, or playcourt; it should in any case be taken in at an elevation of at least twenty feet, and preferably from the roof level, unless taken in through an opening which faces upon an extensive grassed area. Odorous surroundings must always be avoided. Filtration of the air is generally required, is always desirable, and air washing is a most efficient means of air filtration.

Air intakes conforming with these requirements will meet all practical ventilation requirements. Air thus obtained will carry no bacteria menace. This was clearly demonstrated by investigations made by the Ventilation Commission, and by the previous studies of Prof. Winslow and Prof. Baskerville in the New York City schools.

Organic Matter from the Breath or Body

The theory that the air of an occupied apartment, or respired air, contained or accumulated a harmful chemical constituent emanating from the lungs has been disproved and is no longer entertained.

Chemistry of the Air

Oxygen, carbon dioxide, and moisture are the elements of the air which are of general interest within the field of ventilation. In a ventilated apartment the proportion of oxygen is never noticeably lessened, and carbon dioxide is never accumulated to a degree that is of itself of any moment. The latter may serve only to indicate the extent of ventilation or air diffusion. Moisture (humidity) has already been discussed.

Ozone

At various times ozone has been put forward as a panacea for all of the ills of ventilation but never with the same measure of aggressiveness as at the present time. It is claimed that ozone eliminates odors, destroys bacteria, and improves the health of the pupils in the schoolroom.

In this discussion it must be clearly borne in mind that we are dealing exclusively with ozone as applied to, or associated with, the ventilation of schoolrooms, that we are thus dealing with ozone in concentrations of less than one-half part (probably one-hundredth part) ozone per million parts of air, greater concentrations being admittedly objectionable.

The advocates of the use of ozone in ventilation, while frequently estimating the proportion of ozone to be used as one-half part ozone per million parts air, also state that the amount of ozone should be so limited that it can not be detected by the sense of smell. Hill and Aeberly have demonstrated that one-eighth of this quantity of ozone may be readily detected, with one part ozone per hundred million parts air as an amount which may be detected by some people.

As to odors a properly designed, well installed, and carefully operated school building ventilating system will, without the aid of ozone, prevent the accumulation of noticeable odors.

This is true whether the air supply be taken directly from out of doors or whether a recirculation ventilating system be used. In the much more difficult problem of ventilating large auditoria, too, entire freedom from odors may be secured with recirculating ventilating systems without ozonizing equipment. This is being accomplished daily in theatres which are sometimes occupied by five to six thousand people.

It is still a debated question whether ozone really destroys or merely masks odors. Hence, while ozone might be utilized for the destruction of odors in an unventilated or poorly ventilated space there is no reason or justification for its use as a deodorizer in a properly ventilated schoolroom.

The Ventilation Commission experimented with ozone and reported the following result:

"Altogether we studied the effect of ozone on nineteen different school days. The concentration was varied from a point at which the ozone could be barely detected to a point where its presence was very marked, amounting to from 0.004 to 0.009 parts per million. On 33 school sessions when ozone was used the air was free from odor on only four occasions. On seventeen occasions both the ozone odor and the body odor were noticeable. On six occasions the body odor only was apparent and on six other sessions only the ozone odor. The combination of the ozone with the body odor produced a sickish, sweetish effect, more distasteful than the body odor alone."

In a school building kept properly clean and properly ventilated bacteria is an altogether negligible quantity. In support of this statement the following is quoted from a report made by Prof. Winslow (Am. Jour. Pub. Health, Vol. 3, No. 2, 1913) of a study of the ventilation of New York City Schools.

"The results obtained in regard to dust and bacteria seem to indicate that, so far as these suspended matters are concerned, the air in the New York Schools is in a satisfactory condition, without any special measures of protection such as ozone disinfection or air washing. * * * It seems to the writer in view of these results, that the tests for ducts and bacteria in schoolroom air are of relatively minor practical importance except in cases of some special local pollution yielding results considerably in excess of those found in New York."

At no time during the investigations of the New York Commission was there found any evidence of bacteria sufficient to warrant a serious consideration thereof. This subject of bacteria in air is a relative matter for even the best of our drinking water is not entirely free from bacteria.

The claims made for the bacterial effect of ozone warrant examination.

Ohlmüller demonstrated that ozone in considerable strength was incapable of killing dry bacteria within the time-limits of his tests. Erlandsen and Schwartz showed the falsity of the claim that the presence of free ozone means the absence of organic impurity in the air. Hill and Flack showed that a concentration of ozone as small as one part per million was irritating to the respiratory tract and that exposure for two hours to fifteen or twenty parts per million was not without risk to life. They demonstrated that the respiratory metabolism was reduced by the inhalation of ozone.

Sawyer reports (Jour. of A. M. A., Vol. 61, p. 1015) that Jordan and Carlson (Jour. A. M. A., Vol. 61, page 1012), after an exhaustive study of ozone record the following among their conclusions:

"a concentration of the gaseous products (ozone) sufficiently high to kill typhoid bacilli, staphylococci and streptococci, dried on glass rods, in the course of several hours, will kill guinea-pigs in a shorter time. Therefore these products have no value as bactericides in breathable air."

"In view of the evidence already in existence, the hygienic value of ozone in room ventilation would be hardly worth considering were it not for the persistent and sometimes extravagant

claims made by the manufacturers and promoters of ozone generators. So far as the destruction of bacteria is concerned, these claims have little or no foundation. Some bacteria are undoubtedly killed by ozone, especially if they are in a moist condition and are in contact for several hours with a current of ozone coming direct from the generator. Human beings are injuriously affected by amounts of ozone far less than are necessary to produce even this slight bactericidal effect, and there is no evidence for supposing that a quantity of ozone that can be tolerated by man has the least germicidal action. Certain odors are masked by ozone even in weak concentrations. Is such masking of odors, desirable and generally advantageous? We think not. It seems to us that this is wrong in principle, and that ozone is being used, and will be used, as a crutch to bolster up poor ventilation systems. Ozone does not make 'pure air' any more than strong spices make pure food."

From a paper on the subject of ozone by Czapelewski (Cologne, 1913) are taken the following quotations:

"Sonntag was not able to prove a bactericidal effect with dry ozone, nor did Konrich get very encouraging results. Filter paper, dipped in bouillon cultures and dried, was exposed to the ozone in a glass vessel without becoming sterilized. The same was true when the bacteria was dried on glass rods, thus bacteria are not killed by dry ozone."

"As we need the oxygen in the air for our life processes, and as we can use the same only in the pure uncontaminated state from the outside, we must resort to the latter to supply our rooms with fresh air. The only safe method of obtaining this is an efficient ventilation installation, but since it is not always easy to obtain perfect ventilation, ozone has been used in many cases as a very helpful ally, and within a comparatively short time there have been installed a large number of ozone ventilation plants."

Herein is the suggestion of the use of ozone to bolster up the defective ventilating plant. Manifestly ventilation by recirculation was not known to this author at the time of this writing.

Konrich also obtained negative results with cultures dried on strips of filter paper and on glass rods.

Froelich found some diminution in air bacteria with strong ozone.

Rideal required 500 parts ozone per million parts air for germicidal purposes.

Milton W. Franklin (1914) reports that "efforts to disinfect occupied rooms have shown that ozone, in concentrations sufficient to produce sterility of the cultures, is irritating to the mucous membranes of the respiratory tract and in fact will produce death in guinea pigs, but as pointed out above, sterilization of atmosphere has little sanitary value and it must be remembered that no known method of room disinfection can be practiced in the presence of room occupants. * * * The general evidence of laboratory experimentation seems to indicate that low concentrations of ozone, at least, have no consistently demonstrable action on dried bacteria, whether in cultures or floating in air. "So far as is definitely known the value of ozone in ventilation is not due to any beneficial effect upon the human economy."

Ludwig Van Kufer, (Berlin, 1913) remarks on ozone as follows:

"An opinion is prevailing that ozone also has the power to kill germs and bacteria floating in the air. So far, a fully valid proof could not be shown to strengthen this point of view. At all events, it is very probable that ozone, highly concentrated, possesses a germicidal nature to a large degree, but this we can ignore, when ozone is utilized for ventilation purely."

Hill and Aeberly found that 2.1 to 8.3 parts per million showed no bactericidal effects, nor even very much higher concentrations unless long continued.

As Franklin states there is no record of any beneficial effect of ozone upon the health of human beings, and certainly not in the low concentrations advocated for use in connection with school ventilation. Such results as have been claimed for ozone used in conjunction with ventilation have been and can be duplicated in cases where defective ventilation has been replaced by proper ventilation. (See, The Public

Health Movement, Am. Acad. Pol. and Soc. Science, 1911).

In view of the above citations there appears no justification for the expense of installation and operation of such an unnecessary piece of equipment as an ozonizer in a new school building ventilating system.

It is sometimes said that if ozone does not kill bacteria it inhibits the growth thereof. Assuming that 500 parts ozone per million parts air are required to assure bactericidal action (Rideal) is it reasonable to expect any action whatever, inhibiting or otherwise, upon bacteria with a concentration of one-hundredth part per million (within the limits of the sense of smell), or one-fifty-thousandth part of that required to kill bacteria? Any effect upon bacteria of ozone as may, with comfort, be used in the ventilation of schools is yet to be proven. Even if this were proven there is ample justification for the belief that there does not exist the need of ozone as a bactericidal agent in an efficient ventilating system.

When installed the ozonizer is usually placed at the inlet of the air washer. Thus located the water in the air washer absorbs more or less of the ozone and its further effect, if any, is debatable.

Data at hand indicates that considerably less than one per cent of new school buildings built within five years have been provided with ozonizing equipment.²

Methods of Determining the Effects of Ventilation

Those interested in this subject will find a great deal of interest in the report of the Ventilation Commission.

Some Essentials of Ventilation

A careful analysis of the report of the Commission will clearly define the conviction of the Commission that the heating and the ventilating functions of the heating and ventilating installation should be, in just so far as possible, separate features of the installation. Manifestly the "split" mechanical system only fully meets this requirement. Practice and theory join hands in this matter. The best results in heating and the best results in ventilation are thus secured. The writer has known of "blast" systems which have been changed to "split" systems by the addition of the direct radiation but has never heard of a split system having been changed to a blast system. The convenience and the economy of preheating, before occupancy, and in retaining heat in the building after school hours, as provided by the direct radiation, are very real.

It is a mistake, however, to put too much direct radiation into the classrooms, giving rise to excessively heated areas and interfering with a proper divorcing of the heating and the ventilating functions of the system. Only enough direct radiation should be installed to counterbalance the heat losses through outside walls and windows, neglecting air change and infiltration for which the ventilation will provide. Hundreds of school buildings thus equipped demonstrate the soundness of this conclusion.

A study now in progress by John R. McLure, of new school buildings distributed among 64 cities over the entire country shows that of 349 typical new buildings built since 1918, but 39 are equipped with the "all-blast" system. Ninety per cent of these new buildings are equipped with the "split" system, this in the opinion of the writer, being substantial evidence that this has been found the most satisfactory.

The best reason offered, so far as known, for the advocacy of the installation of the "blast" system is that it necessitates the operation of the ventilating system whenever heat is required. Such an argument is manifestly weak and presupposes a lack of intelligence or inter-

est upon the part of the school board in the welfare of the children under their care. The "blast" system is inherently weak in provision for preheating and after-heating, and is more expensive in operation in the items of fuel and electric current.

A second conclusion which may be justifiably drawn from a study of the report of the Ventilation Commission is that the type of heating and ventilating plant installed should be that which will render the control of the volume and the temperature of the air supply to each classroom entirely independent of any other classroom in the building. Manifestly this requirement cannot be met when a trunk duct system of air distribution is utilized, i. e., one which distributes air of the same temperature to every room.

The report of the commission suggests two means of accomplishing this result: the window ventilating system, and the individual duct split system. The Unit Ventilating System, introduced since the date of the Commission's investigations, also accomplishes this result.

Window Ventilation

A clearly defined method of window ventilation, it should be emphasized, was referred to by the Ventilation Commission. Such a system must be as intelligently installed as a mechanical system. There is a tendency to term any system utilizing the windows as a source of air supply, a "window ventilating system," when in reality the most of such systems are not ventilating systems at all.

The success of the method of schoolroom ventilation by window inlets and gravity exhaust depends, as stated by the Ventilation Commission (pp. 521 and 522), upon the fulfillment of certain essentials which may be summarized as follows:

"(a) Radiators must be located beneath the windows and extend for the full width of the windows from which the air supply is derived. These radiators, because much larger than those customarily installed in ordinary plenum systems, should be either automatically controlled by intermediate acting thermostats or equipped with fractional or modulating hand-controlled valves, placed at the top of the supply end of the radiator. Even when automatic control is included it is best to supplement it by the provision of hand control as well; and standard metal radiator shields are desirable to protect the pupils nearest the radiators from excessive heat. It is to be noted that the use of intermediate acting thermostats or modulating hand-controlled valves presupposes the use of a vapor or vacuum steam heating system.

"(b) Deflecting boards of some satisfactory type should be placed at the bottom of the windows. Devices which include small box-like openings, and devices which involve the use of filtering screens of various types are undesirable.

"A plane glass deflector one foot high is fairly satisfactory, but the best results may be obtained by the use of curved vane deflectors which secure the most equable distribution of the air. The windows in the use of this method should open from the bottom and not from the top.

"(c) Exhaust ducts having a total area of not less than 8 square feet for an ordinary schoolroom should be provided on the wall opposite the windows. These exhaust openings should be conveniently dampered so that their area may be adjusted to varying weather conditions. The exhaust ducts should be carried up through the interior of the building so as to avoid chilling and the tendency to back drafts should be further reduced by placing an aspirating cowl on the opening of the roof and perhaps by placing heating coils in the exhaust duct.

"(d) The schoolroom should not be overcrowded. The successful results reported by us with this method of ventilation have been obtained with a cubic space allowance of 250 cubic feet per second grade child (39 children in an ordinary schoolroom) and with a cubic space allowance of 310 cubic feet per sixth grade child (31 children in an ordinary schoolroom).

"(e) A large thermometer with 68 degrees F. clearly indicated as a danger point should be displayed in a prominent position on the teacher's desk."

The writer dissents with the proposal to supply hand control as well as automatic control to the radiators.

It has been the subject of practical observation that a favorably located school building of small or moderate size, constructed upon plans to which the required system of exhaust flues are adaptable, placed in the hands of believers and enthusiasts in window ventilation, with constant and thorough supervision, with all other conditions favorable, will undoubtedly give splendid results in ventilation by this method, largely in proportion as watchful supervision is maintained. Such satisfactory results are the subject of the testimony of competent observers.

The difficulties with window ventilation lay in the practical application thereof and in its day in and day out use.

It will be recalled that a less prevalence of respiratory diseases was found by the Commission in the window ventilated schoolrooms, upon which fact has been based much of the recent advocacy of window ventilation. On this subject, however, the Commission has this to say (page 439):

"If fan rooms were customarily kept at temperatures below 68 degrees it is entirely possible that respiratory illness would be no greater than in window rooms at the same temperature."

That is, high temperatures are associated with excessive respiratory diseases, hence 68 degrees should be the maximum temperature of the schoolroom. The same point is again made in the report (page 435) in the following words:

"It would appear, then, that so long as the room temperature does not average over 68 degrees F. there is little difference to be noted so far as respiratory illness is concerned, between the naturally ventilated and the fan ventilated rooms."

Again (on page 433) occurs this statement: "A modern form of mechanical ventilation with high temperatures is associated with more respiratory sickness than occurs in naturally ventilated rooms with gravity exhaust. On the other hand, fan ventilation, lacking many modern features, as in Public School 147, is associated with less respiratory illness than occurs in naturally ventilated rooms."

The operation of the window ventilation system assumes that the windows shall be kept open to provide a source of air supply and the radiator must be controlled with relation to the extent of the window opening. As less heat is supplied by the radiator the less the window may be opened and the less ventilation there will be. The proper balance of heat and window opening requires constant attention and imposes upon the busy teacher duties which are extraneous and which are the first to be neglected. Only when the interest, enthusiasm and attention of the teachers are obtained, while constant supervision is maintained to assure the continuance thereof, and when other conditions are favorable, will the use of the window ventilating system be found to be practical.

In the case of a certain school recently visited which was equipped with the approved type of window ventilating system there was found but one open window in the entire building. Thus the building was entirely without ventilation. This condition is frequently found to exist, and often in spite of the fact that the principal may be an enthusiastic advocate of window ventilation. Such conditions constitute a reversion to those practices of thirty years or more ago which brought about the development of mechanical ventilation for school buildings.

The window ventilating system may not be used in buildings surrounded by dusty streets or in buildings subjected to odorous surroundings, and buildings subjected to strong prevailing winds upon one side are necessarily deficient in ventilation on the opposite side. "Back drafts" are frequent occurrences.

(Continued on Page 140)

²Study now in progress by John R. McLure.



THE BLAIR JUNIOR HIGH SCHOOL, NORFOLK, VA.

Messrs. Calrow & Wreen, Architects, Norfolk.

Progress Made by the School System of Norfolk, Virginia

Leah C. Haller, Secretary of the Norfolk School Board.

The school system of the City of Norfolk has taken a decided stride forward in its development by the reorganization of the 6-3-3 plan basis. This was made possible by the erection of two buildings used as junior high schools, one to serve the eastern and one the western sections of the city.

During the last five years the Norfolk system has grown from one high and eighteen elementary school buildings for white children and one high and seven elementary school buildings for the colored children to one senior high, two junior high and 24 elementary schools to care for the white and one high and ten elementary schools for the colored children, with an increase in enrollment from 13,000 in 1918, to 20,000 children. Of the original centers, eight have been enlarged during this period, thereby greatly increasing the seating capacity.

Three years ago the course of the growth of the city was such that the white elementary schools operated with part-time sessions in some sections, and the high school facilities were inadequate to properly house the children applying for admission. A city-wide study was given to this overcrowded condition to determine the best method of relieving the congestion.

After making a survey of developments in other localities and giving due consideration to all of the local conditions involved, it was decided that the erection of two large junior high schools with seating capacity of about 2,300 would be the best solution of the problem as related to the schools for the white children. Two school buildings it seemed would care for the pupils of the two upper grades of the elementary schools and the first year of the high school.

In the summer of 1921 the construction of these buildings was begun. The contract for the building to be known as the William H. Ruffner junior high school, located in the eastern section of the city, according to the design

of Messrs. Peebles and Ferguson, architects of Norfolk, was let on July 6. Two months later the school board signed the contract for the erection of the James Blair junior high school, as designed by Messrs. Calrow and Wreen, architects, also of Norfolk. Both of these schools were completed and ready for occupancy at the beginning of the 1923-4 session.

The general plans and exterior views of the two junior high school buildings are shown in the accompanying illustrations. A brief description of each building follows:

William H. Ruffner Junior High School

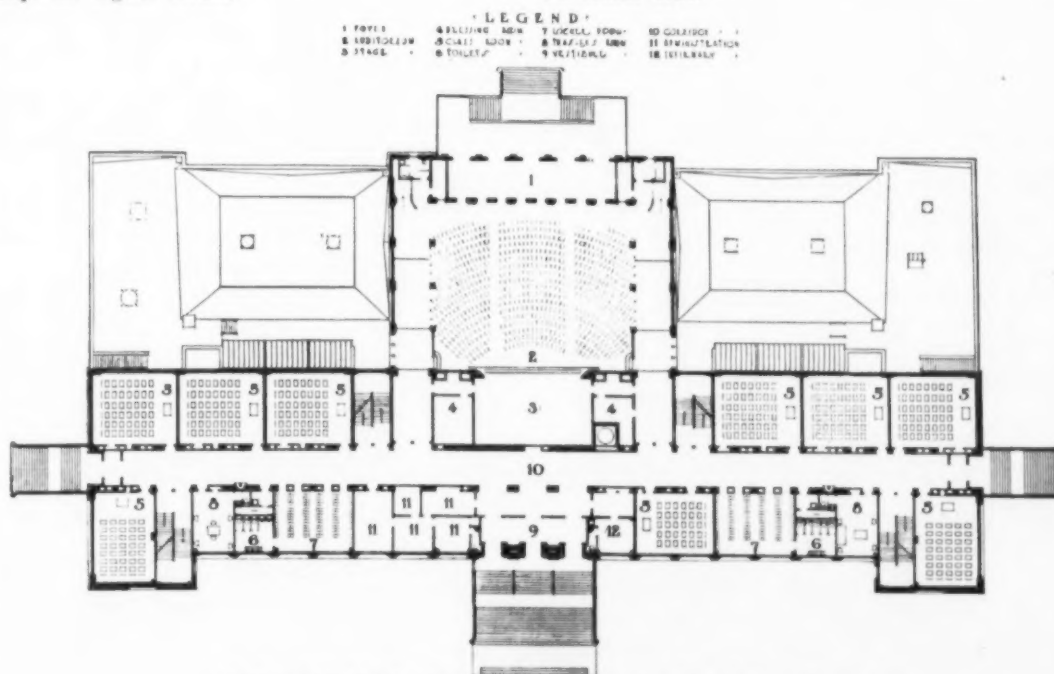
The site upon which this school was erected was very low. The boiler room and gymnasium, usually in part below grade, were necessarily kept on higher levels.

The site fronts on one of the city parks and this permitted an orientation of the building so that the halls could run truly north and south and all classrooms have either east or west exposure.

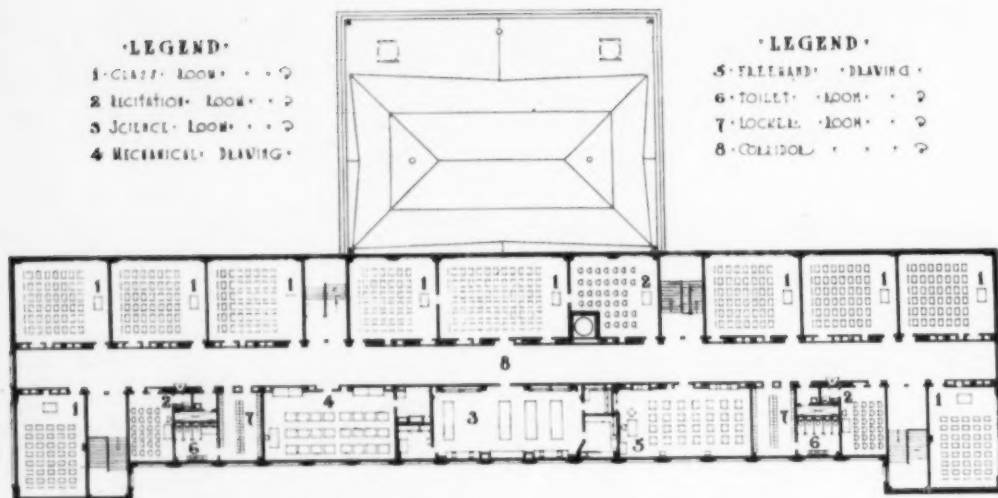
The design was determined by the condition that it was desired to construct a simple, attractive structure, satisfying all the demands of the best modern school practice, but without expense for undue ornamentation.

The building readily divides itself into three essential units: (1) the instruction portion; (2) the auditorium; (3) the service portion.

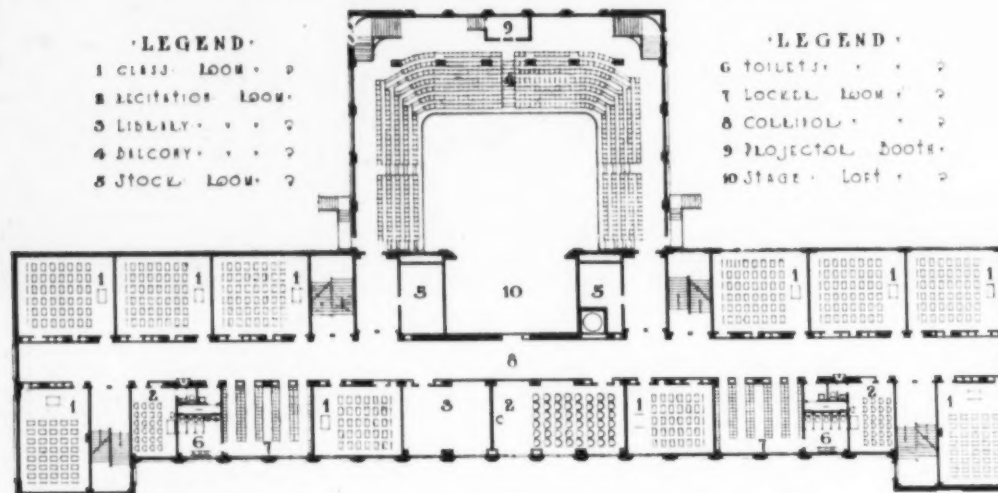
The instruction portion is a simple rectangular unit composed of a central hall with the teaching accommodations and secondary rooms on either side.



FIRST FLOOR PLAN, THE BLAIR JUNIOR HIGH SCHOOL, NORFOLK, VA.



THIRD FLOOR PLAN, THE BLAIR JUNIOR HIGH SCHOOL, NORFOLK, VA.



SECOND FLOOR PLAN, THE BLAIR JUNIOR HIGH SCHOOL, NORFOLK, VA.

The auditorium, accommodating 1,060, is at its lowest point at the grade level, the usual rise to the floor determining the height of the entrance steps. The auditorium is readily accessible from the instruction portion of the building, yet, it stands free, being lighted and ventilated on three sides. Incidentally, it is

used not only for school purposes, but for general entertainments, and is so located that when used for these purposes, it can be isolated from the other part of the school as a separate unit.

The service portion may be said to begin at the lowest level with the boiler room, and extends upward with the cafeteria and kitchen on

the next level, then the locker and shower rooms and then the gymnasium above. This arrangement gives satisfactory light and ventilation to these portions of the building.

The gymnasium has the unusual advantage of being lighted and ventilated by large windows on all four sides. It is devised by motor operated steel shutters so that it can be used in separate sections for boys and girls, or as one complete unit. Complete shower and locker equipment is provided for both boys and girls.

The building is designed to accommodate 1,200 pupils. It is planned without special reference to extension, and as it stands is a complete unit.

It is heated by steam, the split system of direct radiation in the room to supply heat and warm air for ventilation through ducts located in the "breathing walls", on each side of the corridor.

The construction is that of a steel frame with metal lumber joists, fireproof throughout.

The structure, including architects' fees, cost \$604,630.59. The equipment cost approximately \$70,000.

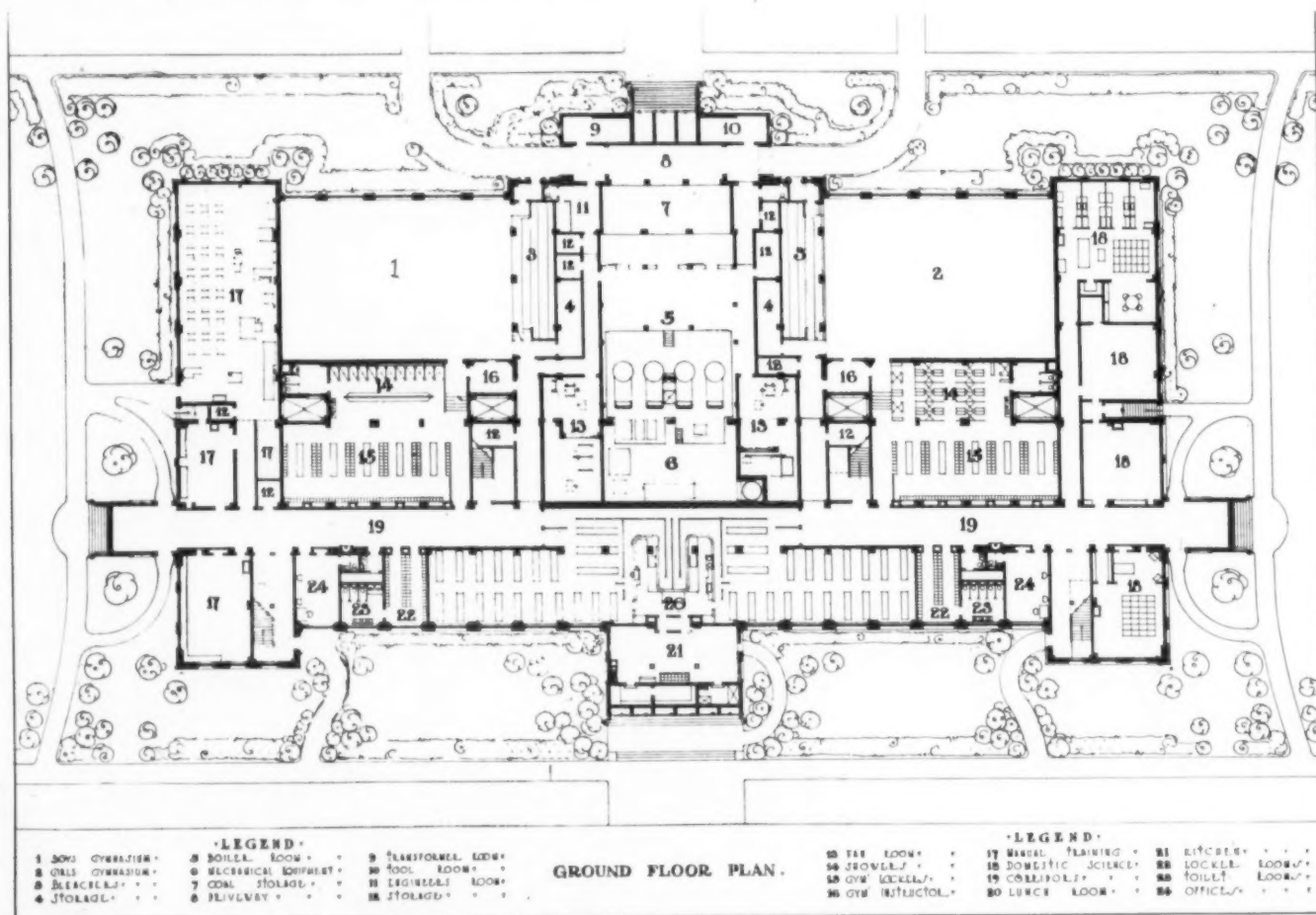
James Blair Junior High School

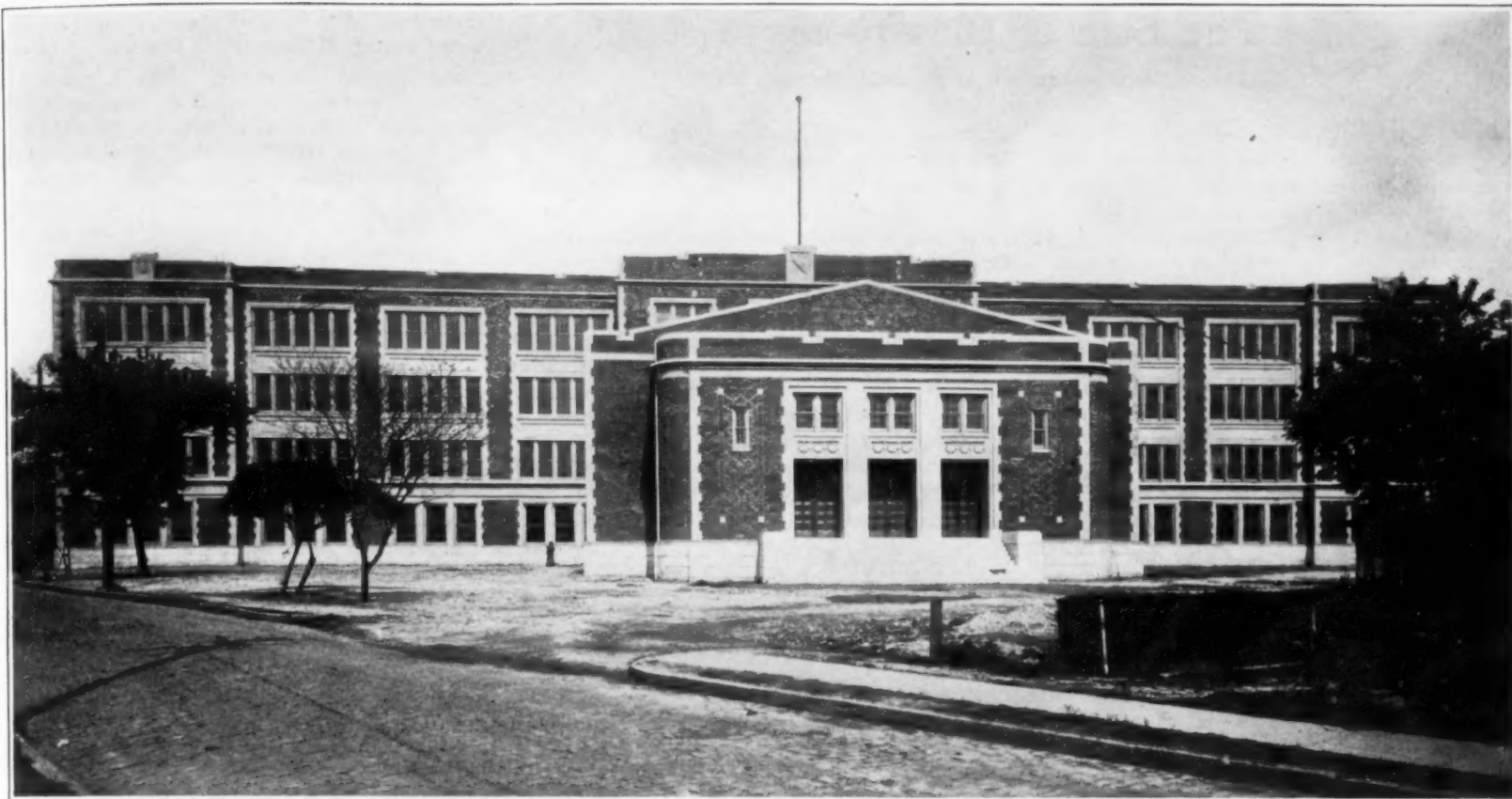
The site in this case lay between two streets running from northwest to southeast, and was of such dimensions that the orientation was fixed so that the classrooms were lighted from the northeast and southwest.

The ground water level was about four feet below the street level so that all floors of the so-called basement, except the boiler pit, were kept above the street grade.

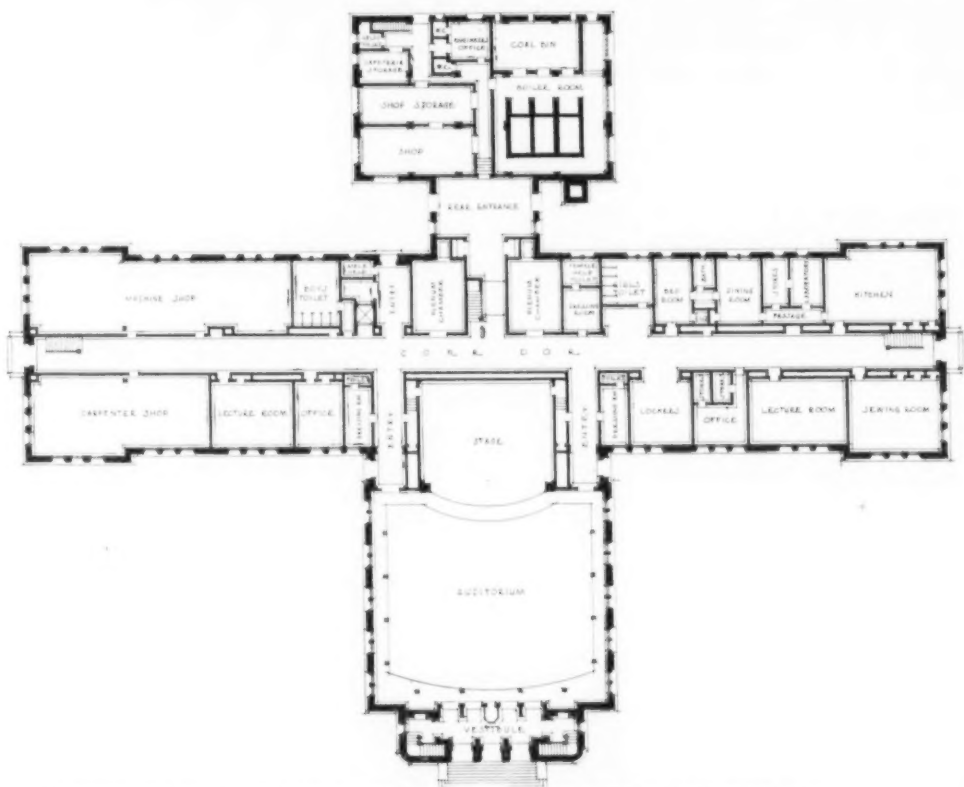
Cost was also in this case an important consideration, and, while the location of the building demanded a certain degree of architectural ornamentation, this element was conservatively treated.

The main portion of the building, a rectangle four stories in height, contains the administration section, classrooms, offices, rest rooms, and toilets. These are located on each side of through halls, that, on the first floor, terminating in exterior steps down to grade. The basement of this portion of the building houses

GROUND FLOOR PLAN, THE BLAIR JUNIOR HIGH SCHOOL, NORFOLK, VA.
Calrow & Wren, Architects, Norfolk.



THE RUFFNER JUNIOR HIGH SCHOOL, NORFOLK, VA. Peebles & Ferguson, Architects, Norfolk.



GROUND FLOOR PLAN, THE RUFFNER JUNIOR HIGH SCHOOL, NORFOLK, VA.

the lunch room, bath and locker rooms, and some of the units of the manual training and domestic science departments.

Extending from the main building is the auditorium section. This is so designed that it may be isolated from the school and used for community entertainments. This auditorium seats twelve hundred people, and is equipped with a complete stage switchboard, projection booth and other electrical appliances, fitting it for use for school or amateur theatrical exhibitions. The space is day lighted on three sides and has its independent system of ventilation.

The rear wing also contains the boilers and mechanical plant and the coal storage space.

On each side of the rear wing are one-story units. That to the east houses the girls' gymnasium and certain portions of the domestic science departments, while that to the west

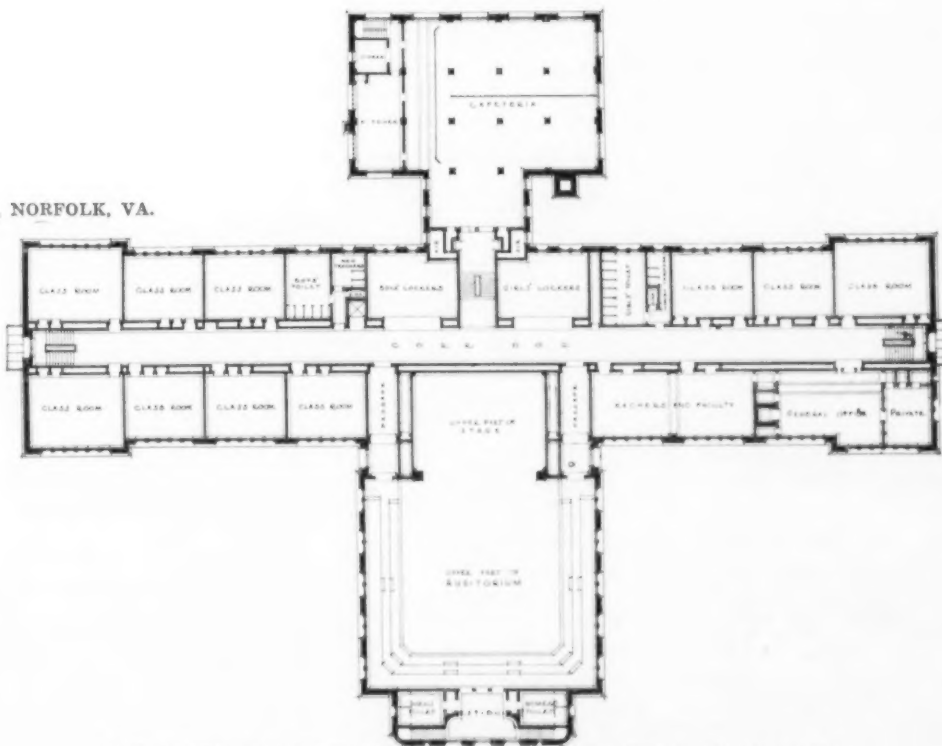
contains the boys' gymnasium and a woodworking shop. The gymnasiums are each 50'x70', well lighted and ventilated, and provided with exterior independent entrances at grade, so that they may be used for community athletic work.

This building is designed to accommodate, at present, about twelve hundred pupils, but provision has been made for future extension, in order to afford additional accommodations for from five to six hundred children.

A split system of heating and ventilation has also been used in this building. Independent ventilating fans are provided for the auditorium and the two gymnasiums.

The construction is fireproof and is reinforced concrete throughout.

The cost of this structure, including architects' fees, was \$629,257.81 and its equipment cost approximately \$70,000.



FIRST FLOOR PLAN, THE RUFFNER JUNIOR HIGH SCHOOL, NORFOLK, VA.

The Size of Classrooms

W. C. McGinnis, Superintendent of Schools, Revere, Mass.

How large should a classroom be? This is a question which has received considerable attention during the last few years. How large a class should a teacher have to teach? This is a question which has been discussed more or less for twenty years.

There has been a tendency during very recent years for superintendents to recommend to school boards that the size of classrooms in new buildings be smaller than in the older buildings. The reasons given for the superintendents' recommendations are that small classes do better school work than large classes; that it is customary to fill classes to capacity; and that in order to make it impossible to foist more than forty pupils on a teacher the maximum seating capacity of a room should be kept at forty. School boards usually agree with the superintendent as to the desirability of small classes and add another consideration which often leads them to favor small size classrooms. If it has been decided to build an eight, a twelve, or a sixteen classroom schoolhouse the building will cost less if built on a forty pupil capacity plan than if on a 48 pupil capacity plan.

The great majority of superintendents and teachers believe that more efficient work is done in small classes than in large ones. This belief is practically universal among parents and people in general. Prominent educators in all parts of the country have repeatedly gone on record as favoring small classes on the ground that more efficient results are obtained in the small class. Officials connected with various state departments of education have advocated small classes, and some of them have recommended a smaller classroom unit for the sake of efficiency in results of teaching and economy in schoolhouse construction.

The ancients believed the earth was flat. This belief was not based on scientific knowledge but was a universal opinion. Everyone believed it because they had been taught that it was so.

With few exceptions teachers believe that small classes produce more efficient results, and they are very positive in their views. I have been told frequently that it is unreasonable to suppose that a great body of opinion should exist among an educated, well trained, and ex-

perienced class of workers, such as teachers, unless it were based on fact, and that the opinion regarding the relation of the size of the class to the efficiency of the results is so universal and so nearly unanimous that it should be accepted as a sound educational theory which has proved itself to be correct in practical application through the experience of teachers. Later in this article it will be shown that the theory does not prove true in practice. If it does not hold true when tested in actual practice, then, it is mere opinion.

Probably the conditions under which teachers receive their professional training explains to a considerable extent their preference for small classes and their opinion that classes should be small. In nearly all teacher training institutions the number of pupils available for practice teaching is small, and the number of prospective teachers in training is large. Therefore it is necessary to have small classes. Teachers receive their practice teaching with small groups. The normal schools have made a virtue of necessity and emphasize their belief in the desirability of the small class.

The size of classes varies greatly in the cities of the United States, although educational authorities have accepted thirty pupils as the largest number that should be in a class. In 1920 the United States Bureau of Education reported (Bonner, H. R. Bulletin 1920, No. 24) for 1932 cities with populations of over 2500. This report shows the largest number of pupils per class to be "over sixty" and the smallest fourteen. The 1922 report of a committee of the National Education Association reported on 726 cities having populations of 25,000 or more and found conditions about the same as reported by the Bureau of Education. The size of classes varies greatly within a single city and also within a single school. In Los Angeles the elementary school classes range from fifteen to 54 pupils. In Revere, Mass. (1923) the size of classes ranges from 28 to 48.

Enough studies of class size and efficiency have been conducted so that the data available is reliable. The evidence is strongly against the theory that small classes do better work. On the whole the conclusions are that the size

of the class up to 45 or 48 pupils has no relation to the quality of the work.

Rice in 1896 tested six thousand pupils in arithmetic and eight thousand in language. He found that "there is no relationship between the size of the class and the results." Elliot in 1914 tested forty classes in arithmetic, English composition, spelling, and penmanship. His experiment showed that the smaller classes did not do work superior to that of the large classes. Elliot says, "The results show no correlation between class size and attainment." Harlan in 1915 tested 675 classes using the Courtis arithmetic tests. He found that large classes (36 to 45 pupils) made the best records.

Bachman in 1915 made a study of the annual promotions and found that the percentage of pupils promoted is practically the same for classes of all sizes up to fifty. Elliott in 1914 found the same thing true in his study and states that "there is no relationship of significance between size of classes and the number of promotions."

Breed and McCarthy in 1916 carried on an experiment in spelling with 82 classes. They used uniform methods of daily drill and testing. Their large classes had an average enrollment of 45 and the small classes an average enrollment of 27. The large classes showed greater achievement than the smaller ones.

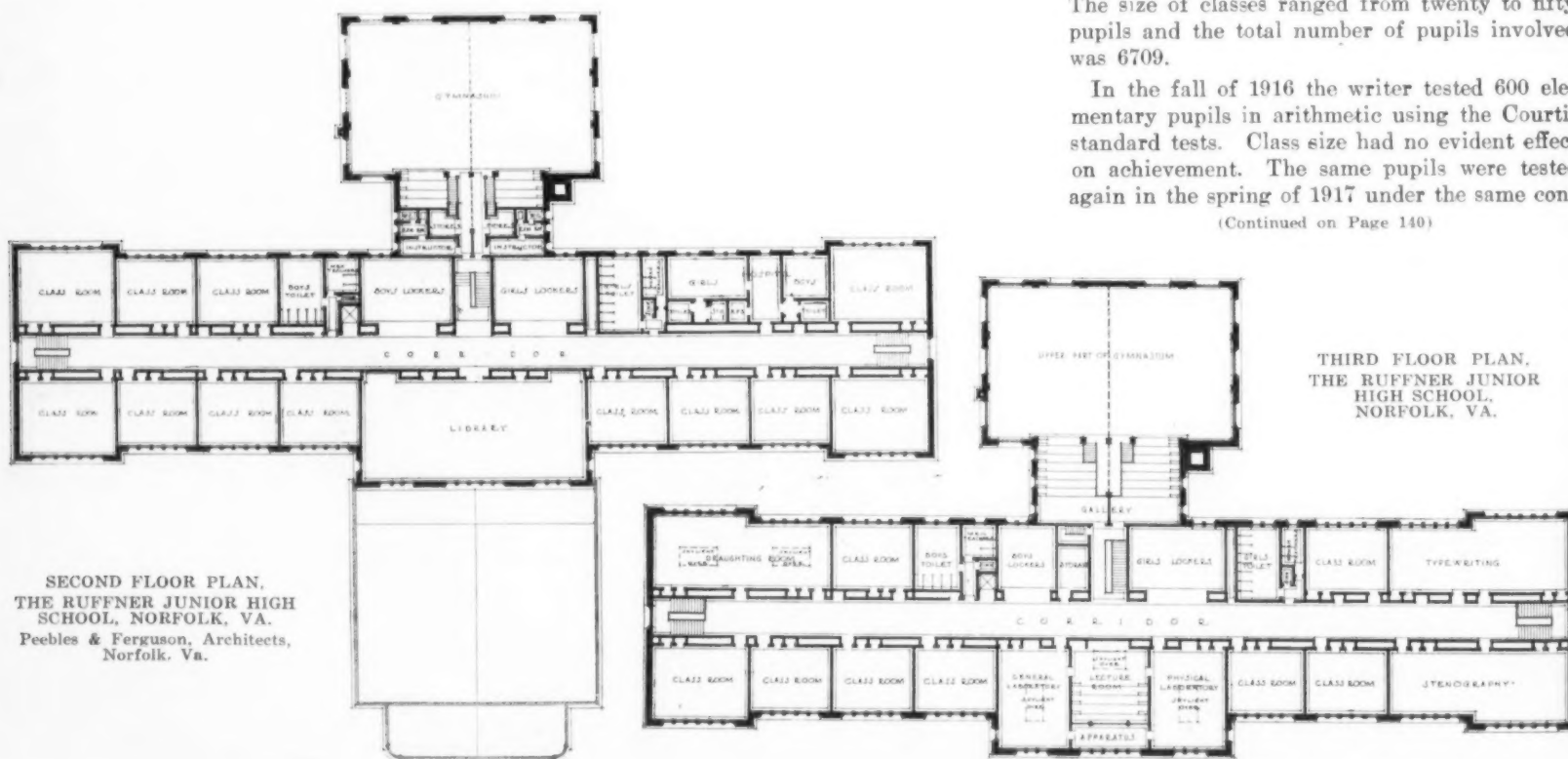
Stevenson in 1922 compared the achievement of pupils in large classes with that of pupils in small classes. In his experiment large classes ranged in size from 42 to 54 and small classes from 33 to 45. He found no significant differences in achievement between small classes and large classes.

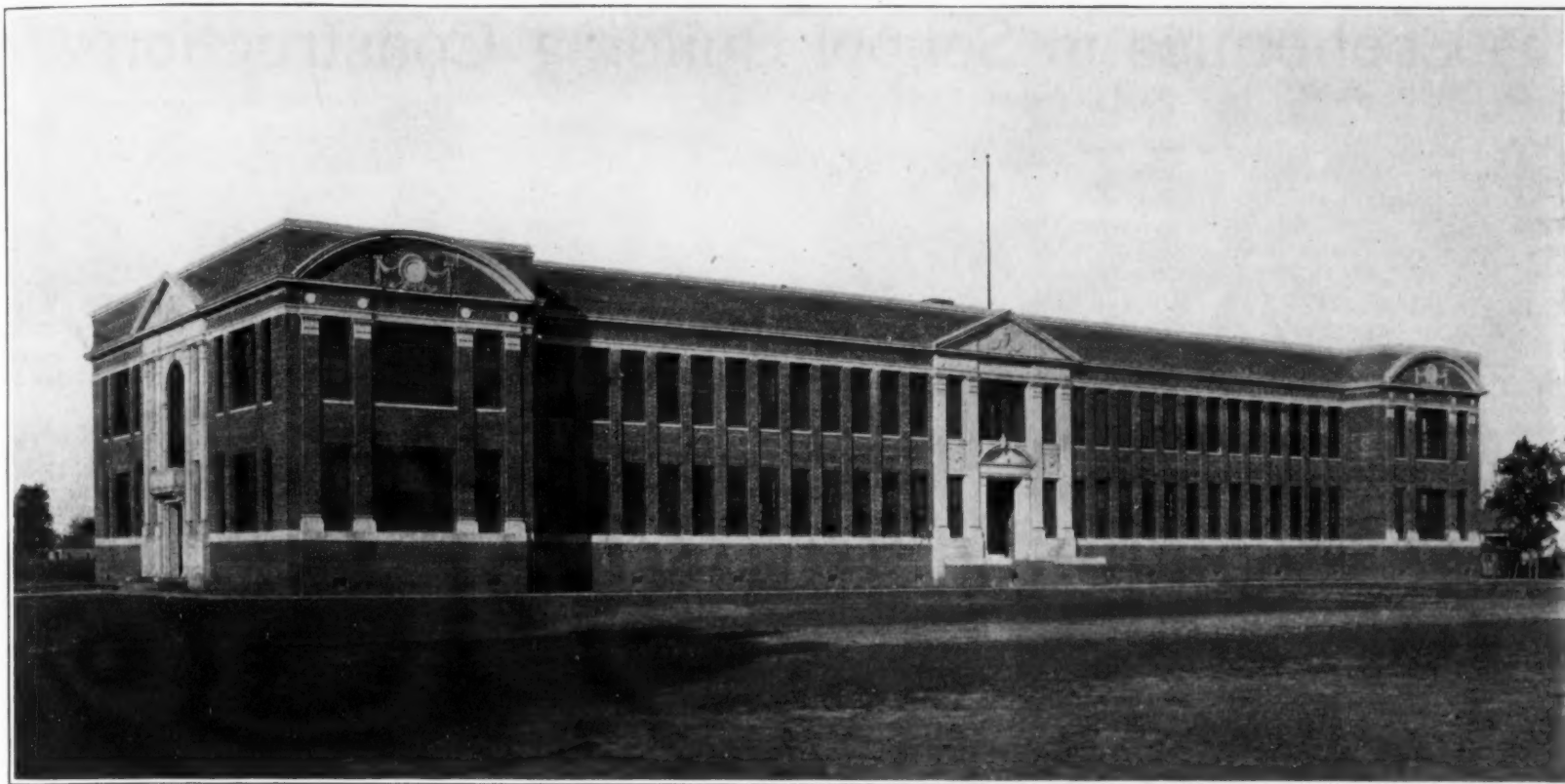
In 1920 the writer made a study of the promotion rate of all classes, grades one to eight inclusive, in Bellows Falls, Vermont, for a period of five years from September, 1914, to June, 1919. The rate of promotion did not vary according to size of classes. The size of classes of an individual teacher varied from year to year. A fourth grade teacher, for instance, had a small class one year and a large class the next. There was no significant difference in the percentage of pupils promoted in the small and large classes by the same teacher.

The promotions of elementary and junior high school pupils in Revere in June, 1922, showed no significant difference between the rate of promotion in small and large classes. The size of classes ranged from twenty to fifty pupils and the total number of pupils involved was 6709.

In the fall of 1916 the writer tested 600 elementary pupils in arithmetic using the Courtis standard tests. Class size had no evident effect on achievement. The same pupils were tested again in the spring of 1917 under the same con-

(Continued on Page 140)





BOSSIER HIGH SCHOOL, BOSSIER CITY, LA. E. F. Nield, Architect, Shreveport, La.

A SOUTHERN HIGH SCHOOL R. V. Kerr, Supt. of Schools, Bossier, La.

Bossier City, located on the opposite bank of Red River from Shreveport, is one of Louisiana's most rapid growing towns. Its population has almost doubled within the past three years. This remarkable growth is due to its proximity to Shreveport and to the establishing of several large manufacturing plants within its corporate limits. The four railroads which serve the town give it ample railroad facilities. The Arkansas-Natchitoches highway (running north and south) and the Vicksburg-Shreveport highway (running east and west) intersect at Bossier City.

In the early part of 1922 the citizens of the town realized that the old frame building had served its usefulness and petitioned the parish (county) school board to order an election for the purpose of issuing bonds to the amount of \$150,000. This election was held on the 18th day of February, 1922, and carried with but one dissenting vote.

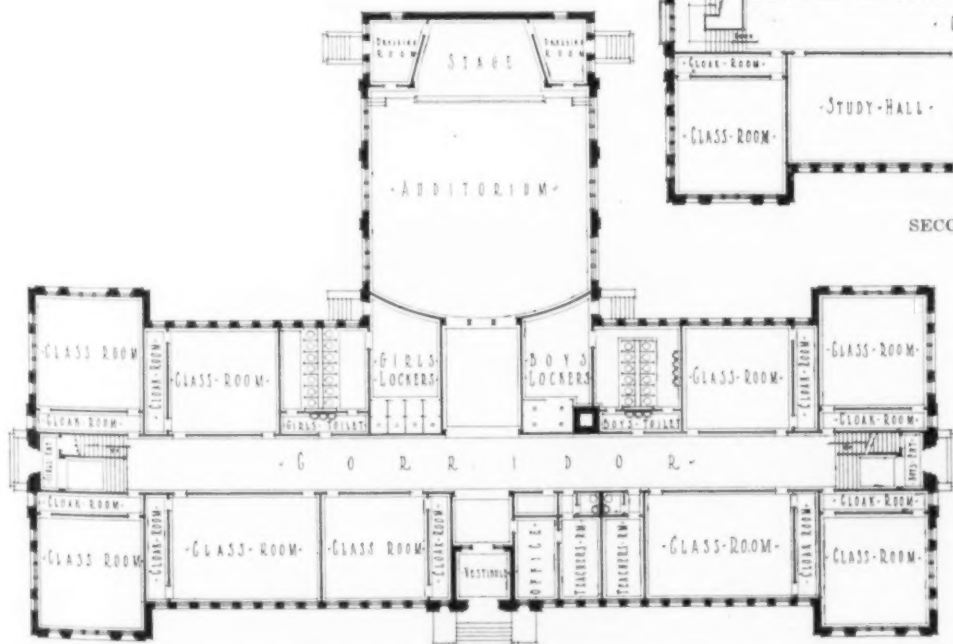
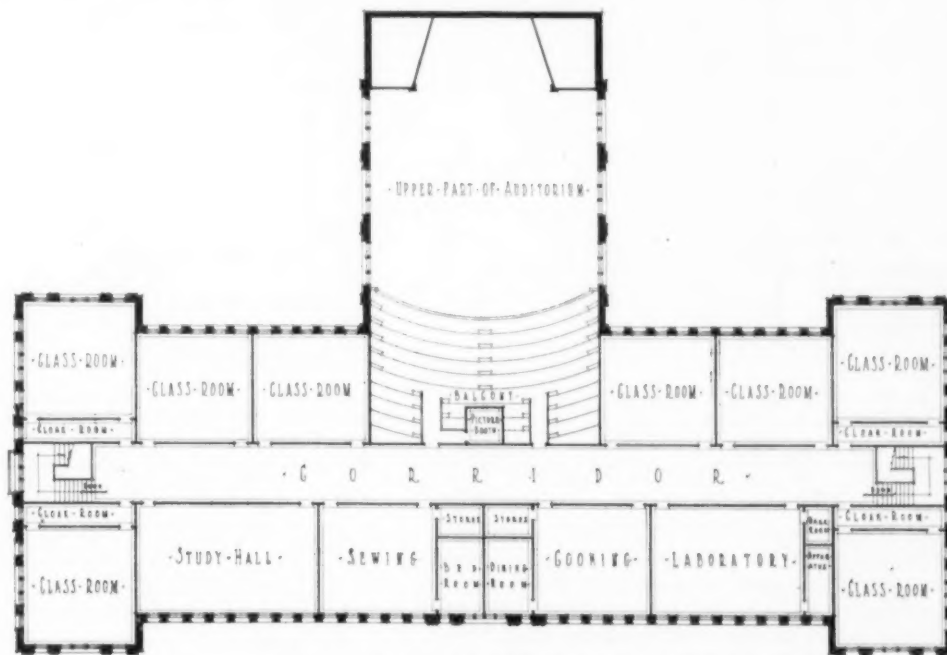
The Bossier City high school was completed September 1, 1923. It is a two-story, T-shaped structure. The corridors, steps, and boiler

room are fireproof. This arrangement makes the building practically fireproof and can be built much cheaper than a fireproof building throughout. The contract price, including the architect's commission, was \$137,000.

The lower floor and the balcony of the auditorium will seat approximately 750 people. The unique feature about the auditorium is that there are no seats under the balcony. This

space was used for shower baths. The outside entrances to the shower baths enable the children to reach the toilets without going through the corridors.

On the first floor there are nine classrooms, baths, auditorium, principal's office, teachers' rest room, library, and toilets. The classrooms on this floor are used for the lower elementary grades.

FIRST FLOOR PLAN, HIGH SCHOOL, BOSSIER CITY, LA.
E. F. Nield, Architect, Shreveport, La.

SECOND FLOOR PLAN, HIGH SCHOOL, BOSSIER, CITY, LA.

On the second floor there are eight classrooms, a study hall, a laboratory, the balcony of the auditorium and the domestic science department. The four end rooms on this floor are used for the upper elementary grades, and the middle section constitutes the high school department.

The laboratory is equipped with two Kewance chemistry desks and four physics tables. This equipment will provide for sixteen pupils each in chemistry and physics. This equipment can be used for biology.

The cooking room contains five tables. Each table accommodates four girls, making a total of twenty to the section. The sewing room is

(Concluded on Page 143)

Economies in School Building Construction

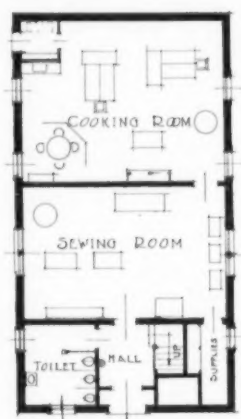
Paul C. Stetson, Superintendent of Instruction, Dayton, Ohio.

If the experience in Dayton is at all typical, other cities are suffering from the effects of financial stringency. For comparatively few years, the Dayton board of education had enough money on which to operate the schools progressively and with some degree of ease so far as the future was concerned. Recently, however, we were confronted with a shortage in our funds. This has been due to a number of causes, all of them legitimate ones. Hand in hand with the decreased income of the board of education went an increase in the enrollment. It has been impossible for us to avoid overcrowding the schools, although we are just completing a three million dollar program. It became necessary for us, therefore, to find some way of relieving at least a portion of this congestion, and to do this at a minimum of expense.

This paper is an attempt to show how one city has utilized, at small expense, old school buildings which might otherwise have been abandoned or destroyed. Every board of education in a growing city will find on its hands, sooner or later, several old buildings. This may come in several ways. When territory is annexed to a city, it not infrequently carries with it several old country school buildings which can be used for certain purposes. Again, an old building may become available through the changing of the character of certain districts. As the city grows, certain schools which for-

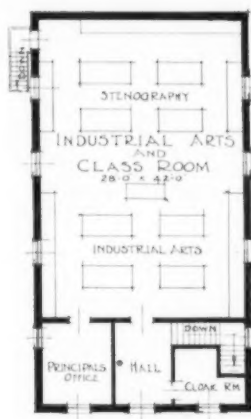


THE GIRLS' PREVOCATIONAL SCHOOL, DAYTON, OHIO.



* FIRST FLOOR PLAN *

GIRLS PREVOCATIONAL SCHOOL



* SECOND FLOOR PLAN *

GIRLS PREVOCATIONAL SCHOOL

the installation of toilets, painting the inside of the building, and the installation of a complete domestic science equipment. This was done by our own construction department at a cost of \$2,807.35. The accompanying photographs show that it is the ordinary type of country school building, and the floor plans show that no partitions were taken out or put in, so that the work was done at a minimum expense. It is now accommodating eighty girls and is a most valuable part of our educational system.

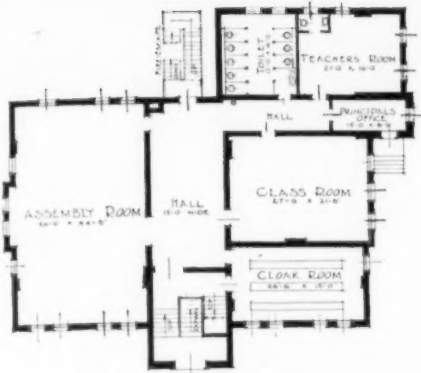
In the down-town section of our city, the board of education had two school buildings for which there was no longer any use, due to the fact that the district was occupied by garages, factories and small shops. It had been felt for some time that there was need for adequate space for our stock department and our construction department. These buildings are shown in the accompanying photographs. The construction department building was built about eighty years ago. The cost of fixing this

merly were crowded and which served useful purposes, may have to be wholly or partially abandoned. This has happened many times in every large city and has happened in Dayton quite recently. The building of a new building may make available an old building which the new one has displaced. If the new building is located on a different site, it should be possible to use the old building to good purpose.

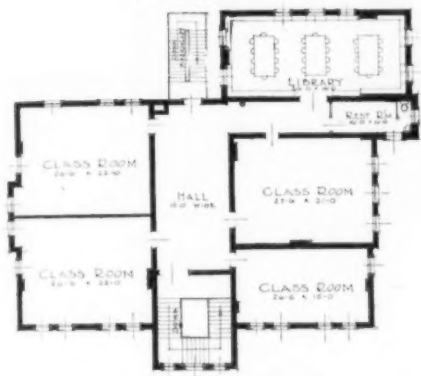
Examples of these three methods by which old buildings come into the possession of boards of education are illustrated in Dayton. As the city grew to the north, a country school was annexed which had not been in use for a number of years, and after annexation the building continued idle. It consisted of three rooms—one large room upstairs and two small rooms downstairs. For a number of years we had felt the need of a pre-vocational school for girls. One had been conducted in the basement of a down-town high school and was not satisfactory from any point of view. After considerable study of the situation, it was felt that such a building could be remodeled for this purpose. It is called the Girls' Pre-vocational School. To put this building in use required



THE BOYS' PREVOCATIONAL SCHOOL, DAYTON, OHIO.



FIRST FLOOR PLAN



SECOND FLOOR PLAN

FLOOR PLANS OF THE DAYTON NORMAL TRAINING SCHOOL, DAYTON, OHIO.

building for our use was only \$361.02. The floor plans show the thoroughly simple arrangements of the rooms.

The stock department of a city which has a purchasing agent who does all of the buying for the schools, becomes an increasingly im-

portant department. It is frequently difficult to find adequate housing space for such a department. The use of an old building solved this problem.

The accompanying floor plans show where partitions have been removed, making six large

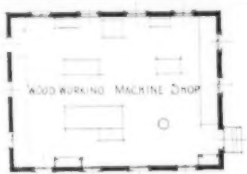


USEFUL FOR MANY YEARS TO COME. THE DAYTON NORMAL TRAINING SCHOOL, DAYTON, OHIO.

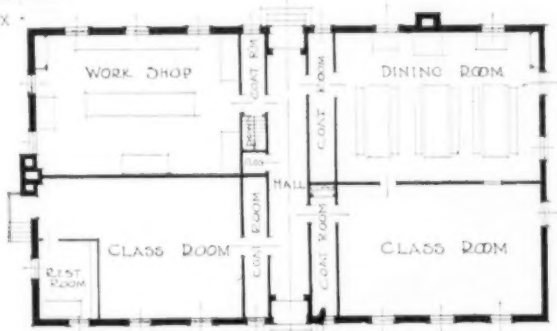


BASEMENT PLAN

BASEMENT OF THE DAYTON NORMAL TRAINING SCHOOL, DAYTON, OHIO.



PLAN OF ANNEX



FIRST FLOOR PLAN

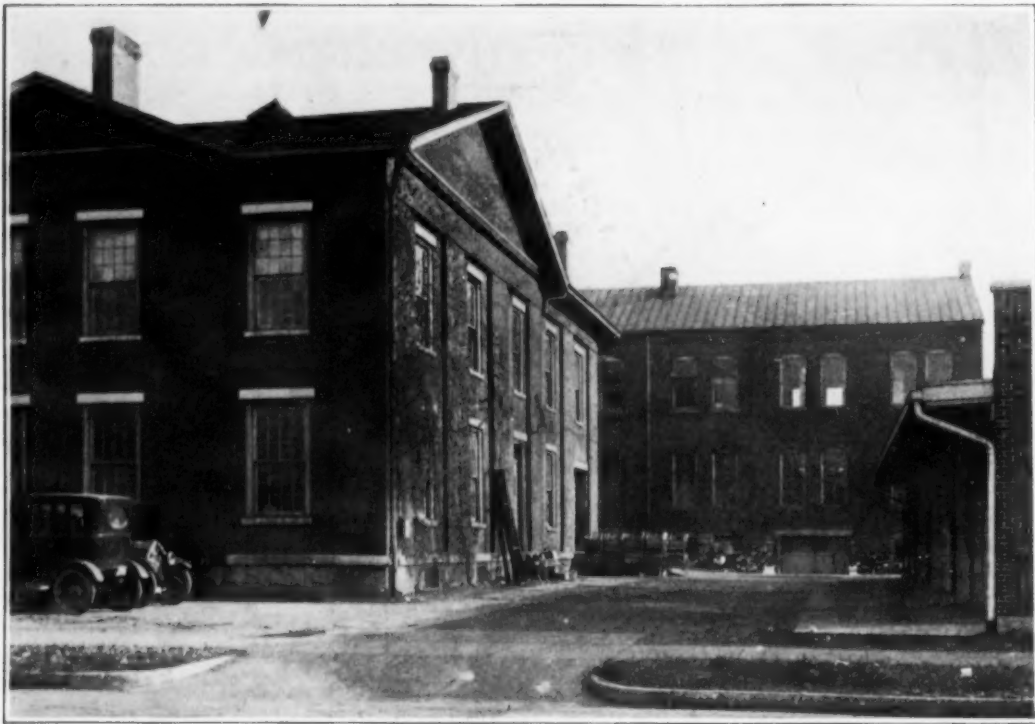


BASEMENT PLAN

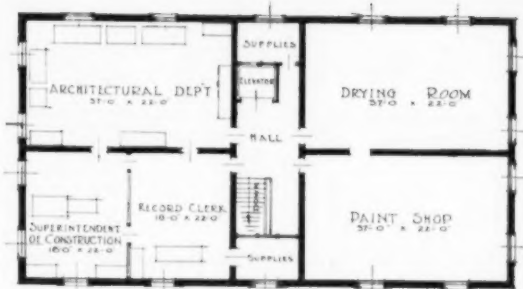
BOYS' PRE-VOCATIONAL SCHOOL
DAYTON, OHIO

rooms. The office of the purchasing agent and his assistants was partitioned off and the supervisor of lunch rooms was given office space on the same floor. This was all done by our construction department at an expense of \$1,811.44. Both of these buildings are admirably adapted to the use to which they were put, although they were no longer useful as school buildings. Should the board of education have to replace these buildings, they would find that the expense of doing so would run into several hundred thousands of dollars. On this same location the board of education erected a garage at an approximate cost of \$5,000. In this garage are housed the cars of the construction department, trucks, etc. The remodeling of these two buildings gave for the construction department 10,500 square feet of floor space and for the stock department 9,500 square feet of floor space. In the construction department building we have a mill room, store rooms, drafting room for the architect, and offices for the superintendent of construction.

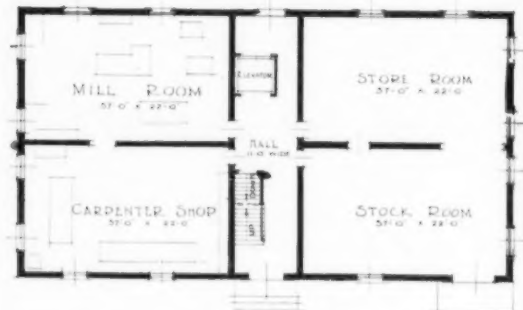
In the western portion of Dayton a new elementary school was built which relieved an old four-room school which had come into possession of the board of education by annexation, and which had for a number of years served as a small elementary school. For some time we had felt that we needed a building for a boys' pre-vocational school. With the installation of some equipment, the four-room brick building and the frame building, which had formerly been used as a kindergarten, were converted into a boys' pre-vocational school. We



THE STOCK DEPARTMENT AND CONSTRUCTION DEPARTMENT BUILDINGS OF THE DAYTON SCHOOL BOARD.



• SECOND FLOOR PLAN •



• FIRST FLOOR PLAN •

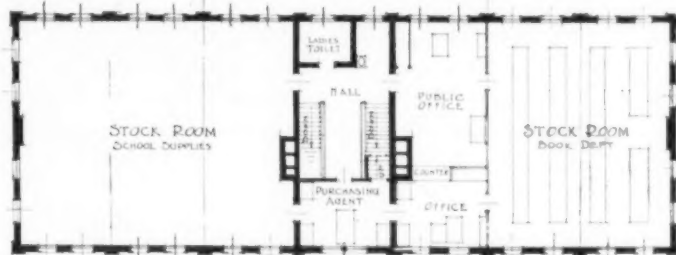
FLOOR PLANS OF THE CONSTRUCTION DEPARTMENT BUILDING OF THE DAYTON SCHOOL BOARD.

have two academic classrooms, each one accommodating thirty pupils, a lunch room where lunches are served to the boys every noon, a "tinkers'" shop where sheet metal work is carried on, and a woodworking shop where the activities usually conducted in such a shop are found. Practically all of the work of fixing up this building was done by the boys themselves and it proved to be a very instructive and valuable project for them. Had this building not been used in some such way, it would have been of no use to the board of education. The expense of adapting this building to its new needs was so small as to be negligible.

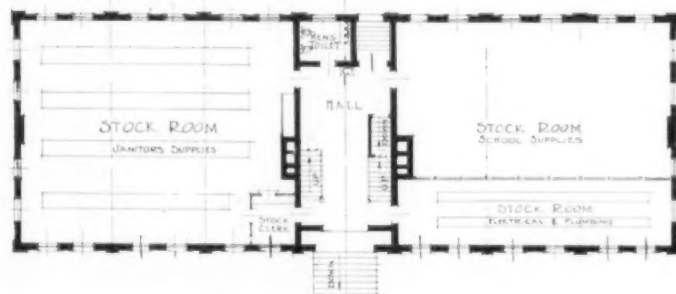
One of the oldest institutions of our system is the normal training school and yet in spite of its age, it has never had a home. Some time ago the board of education purchased for \$35,000 a building which, as will be seen from the accompanying photographs, was of the old type. This was remodeled at a cost of \$15,346.82 and is now being used as a normal training school. In the basement is found a lunch room with a capacity for 150 girls. Upstairs, there is a combined auditorium and gymnasium and a girls' rest room. On the second floor are found four classrooms, a library and the office of the principal. Special treatment has been given the floor between the basement and the first floor to make it fireproof. Perhaps the normal school might be more comfortably housed in a modern fireproof building, but the fact remains that, had the normal school had to wait for such a building, it is doubtful if it would ever have had a home of its own. It is extremely difficult to appropriate money for a normal school when the elementary schools are overcrowded.

With the financial condition which confronts us, our board of education has definitely decided upon the utilization of old buildings for special purposes when the cost of remodeling such buildings is not excessive, and when the use of such buildings does not endanger the lives of teachers and pupils. Only in this way can we hope to reach any solution of our building program. To summarize, we have provided accommodations for our various departments at the following expense:

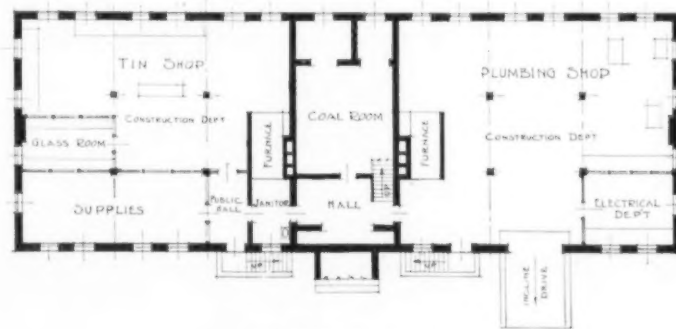
Girls' Pre-vocational School.....	\$2,807.35
Boys' Pre-vocational School (no expense)	0,000.00
Stock Department Building.....	1,811.44
Construction Department Building...	361.02
Normal School	15,346.82
Total	\$20,326.63



• SECOND FLOOR PLAN •



• FIRST FLOOR PLAN •



• BASEMENT PLAN •

STOCK DEPT BUILDING
DAYTON OHIO

Six Chinese Built Modern Schoolhouse
A private Chinese school—well designed, beautifully finished and completely equipped—to accommodate 26 children of six Chinese brothers, is Stockton, Calif., latest educational institution.

The Wong brothers, five of whom reside in Stockton, and one in Seattle, Wash., have built the school for the instruction of their children in the Chinese language and Chinese precepts only. More than 250 representative residents of Stockton attended the dedication.



DETAIL OF THE REAR COURT,
SENIOR HIGH SCHOOL, DUBUQUE, IA.

J. W. Royer, Architect,
Dubuque, Ia., and Urbana, Ill.

The Dubuque, Iowa, Senior High School

Linda Rider, Head of English Department

The educator stands on the mount of vision. He is the sower of the parable. He scatters about him the seed of learning, that, carried by the winds of instruction, falls, some by the way-side, some upon stony ground, some among thorns and some upon good ground.

The seed is all important as is the soil. Yet is the granary even so. Rich stores should be housed in secure and capacious bins. Light, heat and dryness preserve the latent power that in due season springs into beauty. Well built, on the mount above the mist of swamp or river, out of reach of soot from factory chimneys, worm, moth and mildew corrupt not therein. So it is with the seed of learning. It, too, grows abundantly toward the harvest if fostered in airy spaces filled with light.

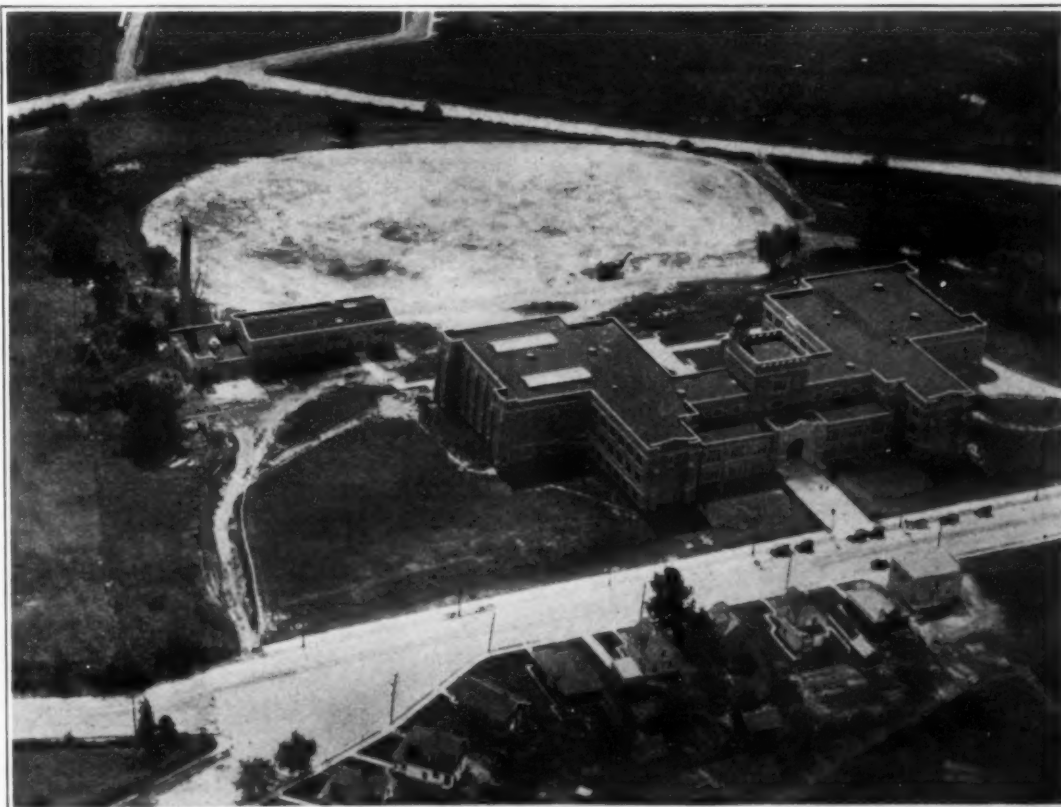
Dubuque is over-fortunate in the location and structure of its senior high school. From the hilltop one sees farther than in the valley, and to our hills we owe much. To the hills leaders have gone for inspiration and strength. Followers should be brought to share their communion. Young people will be brought to think ever of bigger things when they see daily the church spires, the wonderful curve of river and the glorious hills of Illinois and Wisconsin to the east, the wooded slopes to north and south. To the southeast, beyond the river rises a wooded mount with a church at its foot; a smoke stack is in the picture, adding to its beauty with towering, upward-reaching lines. One glimpse, and the boy is already a greater man, the girl a better woman. The sky is bluer, the clouds nearer, the airs circulate more freely, the heart beats more gladly on this hilltop.

From this spot may be seen, too, the Jefferson and the Washington Intermediate schools also newly built of brick in a design harmonizing with that of the senior high. These are on dis-

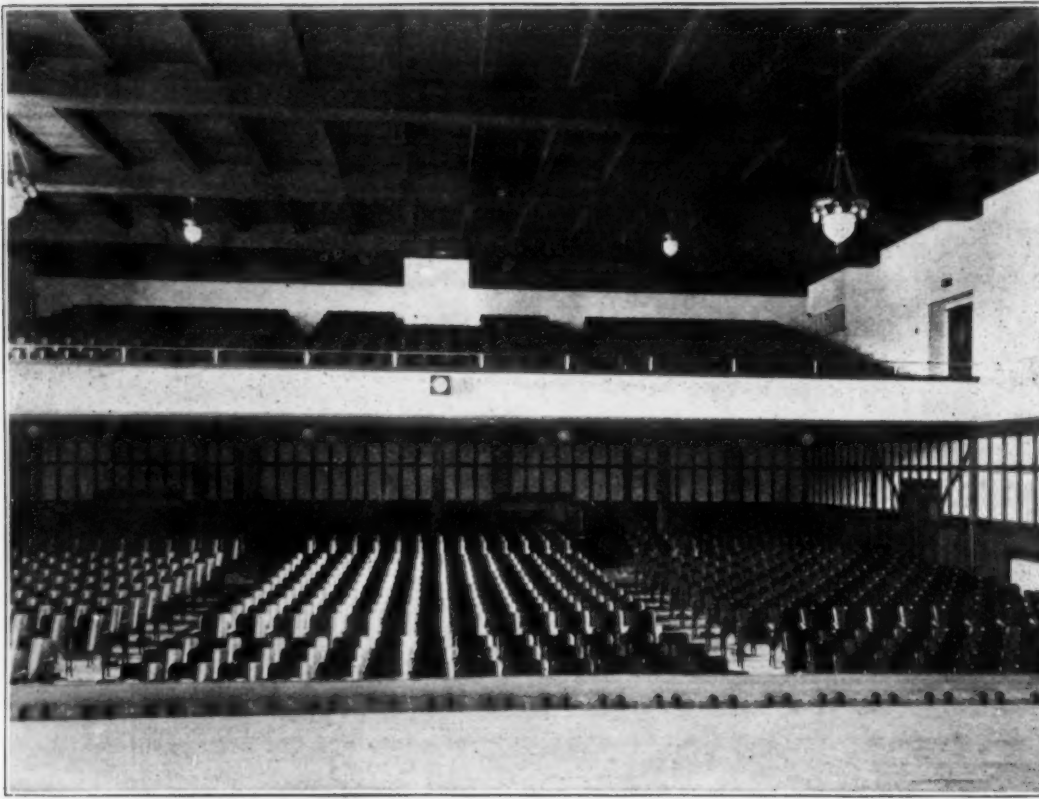
tant hills. But near at hand one beholds an athletic field fit to turn to stone of envy the school that possesses its inferior. It has its rightful share of the twenty acres on which the institution stands. Twenty acres on a hilltop! At the present writing it has not been completed but when it is so it will have a standard size football field, a baseball diamond, tennis courts and a regulation quarter-mile track. (Thanks

to twenty acres!) To the northeast of this is the industrial-arts building which, housing also the heating plant, is separate from the rest in order to eliminate the noise of the machines. Here is ample equipment for metal and wood working.

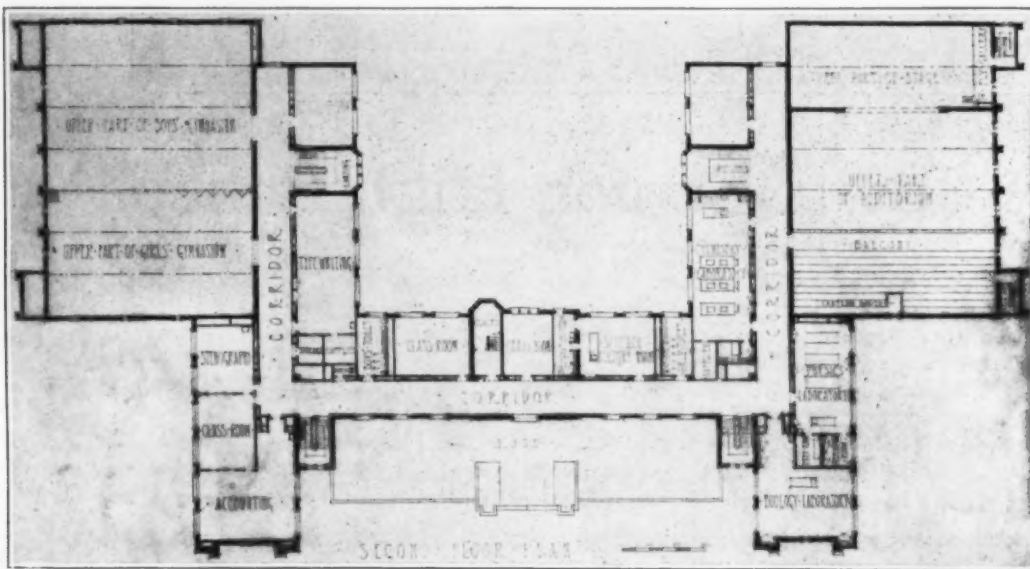
But the glory of the hilltop is the central structure. Built of native limestone with Bedford trim in Gothic design, it stands solidly yet



AIRPLANE VIEW OF THE DUBUQUE SENIOR HIGH SCHOOL, DUBUQUE, IA.
THE WHITE OVAL BACK OF THE BUILDING IS THE ATHLETIC FIELD.



THE AUDITORIUM FROM THE STAGE. THE GOTHIC DETAILS OF THE BUILDING ARE CONSISTENTLY USED IN THIS ROOM.



SECOND FLOOR PLAN, SENIOR HIGH SCHOOL, DUBUQUE, IA.
J. W. Royer, Architect.

gloriously; it lifts its square central tower into the sky. This tower is machiolated except at one corner where there rises to a further height a round domed turret. The entrances to the building are pointed arches, the main one, to the north, being more elaborately carved, with heads of Wisdom and Folly on either side, above. The doors resemble bronze. The other entrances, on the south opening on the court are smaller. They are flanked, as in the main entrance, by stone balustrades set with bronze lights. Bow windows above, scrolls and other emblems in Bedford stone increase the effect of the beauty of these entrances.

These doors are reached from the athletic field by a series of three terraces set with shrubbery. While the building faces north and has its lovely main entrance and extensive parklike grounds on that side, the south or court side is by no means inferior in beauty. It offers, also, equal classrooms for it is so wide and the soft-colored stone does not hurt the eye. Moreover, the Gothic is ever harmonious.

The windows are of small leaded panes. The window area of each classroom equals 25 per cent of the floor area. The minimum angle of incidence of direct light on student's desks is approximately thirty degrees. Few school buildings are so well lighted.

Fresh air is brought into the building from above the roof, passed through tempering coils where it is heated to proper temperature, sent through an air washer which insures proper humidity, and is finally forced by a fan through ducts to each classroom. The air in all classrooms and in the auditorium will be changed every six and one half minutes. The temperature of each room is automatically controlled by means of Johnson thermostats.

The structural work is of reinforced concrete with huge steel trusses spanning the gymnasium and the auditorium. No fire escapes are seen for all stairs are located in fireproof wells. The interior facing of all the walls is hollow brick and the partition walls are made of hollow tile.

The floors of the auditorium and classrooms are made of Asbestone, the floor of the gymnasium of maple. The floors of the corridors are a combination of marble-aggregate and cement called Terrazzo, blocked off in sections so as to resemble mosaic tile.

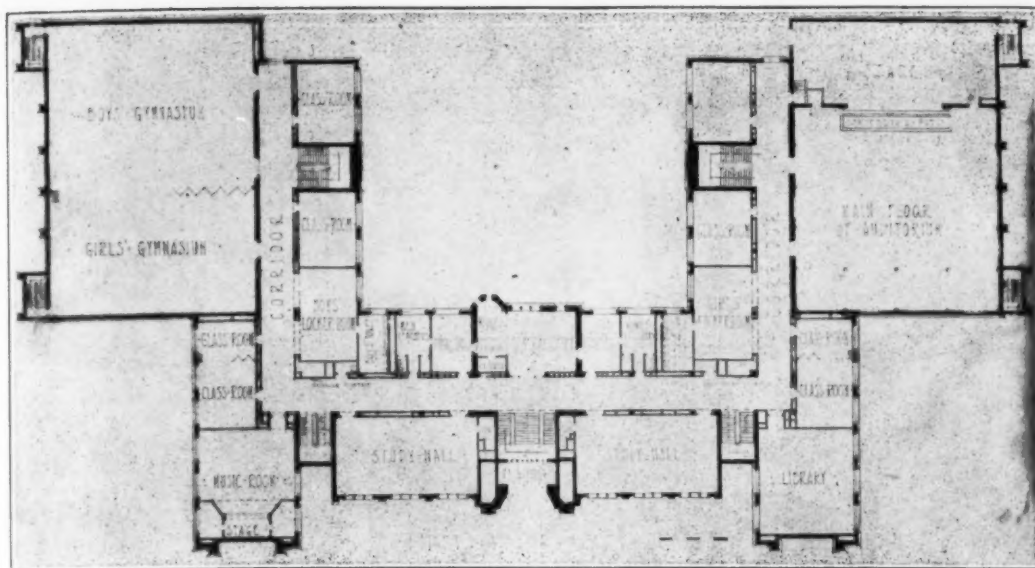
The corridors lend much beauty to the interior. Running the entire length of the building, spacious, with wainscot of green and upper wall and ceiling of white, lighted during the day through small paned classroom doors and win-



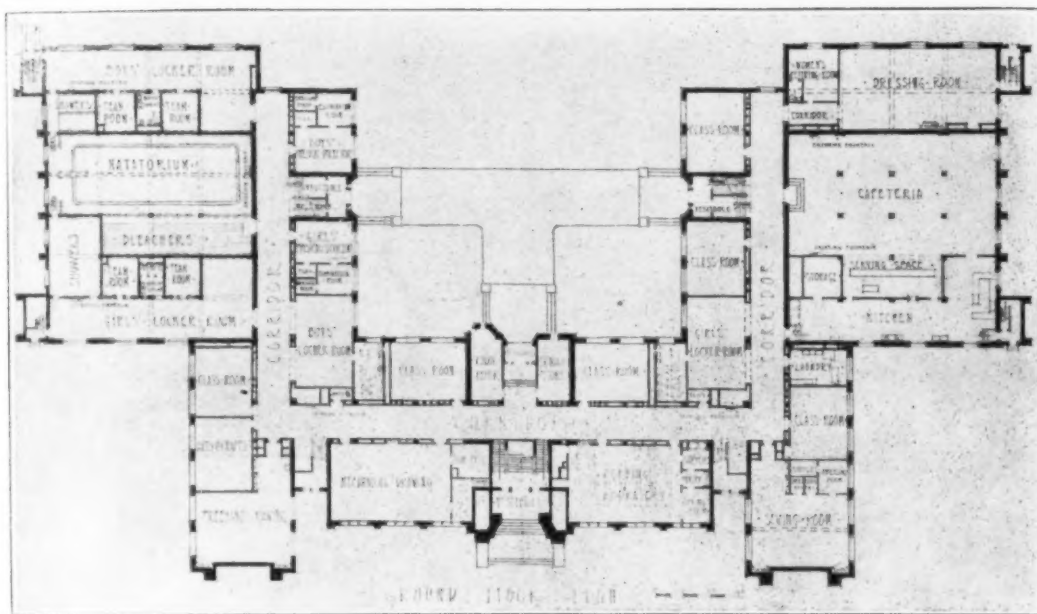
SECTION OF WOODWORKING SHOP IN THE MANUAL ARTS BUILDING, SENIOR HIGH SCHOOL, DUBUQUE, IA.



CAFETERIA, SENIOR HIGH SCHOOL, DUBUQUE, IA.



FIRST FLOOR PLAN, SENIOR HIGH SCHOOL, DUBUQUE, IA.



GROUND FLOOR PLAN, SENIOR HIGH SCHOOL, DUBUQUE, IA.

dows at the ends and at night by hanging globes, with arches spanning the entrances to the lockers, they give the effect of cloisters where learning used to tread its way. The middle upper corridor, unbroken by staircases or door will be used as an art gallery.

The auditorium is likewise an abode of beauty. Seating 1200 in pit and balcony, with

an orchestra pit that will accommodate twenty-five players and a stage measuring 75 by 30 feet, furnished with modern equipment, it holds its own with any auditorium in the state. The windows are high with Gothic scrolls. The high wainscot and proscenium arch are of unvarnished oak of lovely cut. The curtains are of golden-brown velour.

In the midst of all this atmosphere of culture is an abundance of material accommodations for the most practical of subjects. Three rooms of the first floor have been designed and equipped for mechanical drawing, freehand drawing and fine arts. Here, too, is a fine kitchen with space set apart for a model dining room. Here are capacious rooms with long tables for cutting rooms for fitting and machines, large closets for goods for those who learn to sew. The up-to-date cafeteria is situated in the southwest corner of this floor. It has to be seen filled with three hundred and fifty students to be appreciated.

On the top floor, four laboratories, one for chemistry, one for physics, one for biology and one for general science afford splendid opportunities for those interested in science. In the science section, too, a radio station has been installed. In another section of this floor are four rooms designed and equipped for a rapidly growing commercial department.

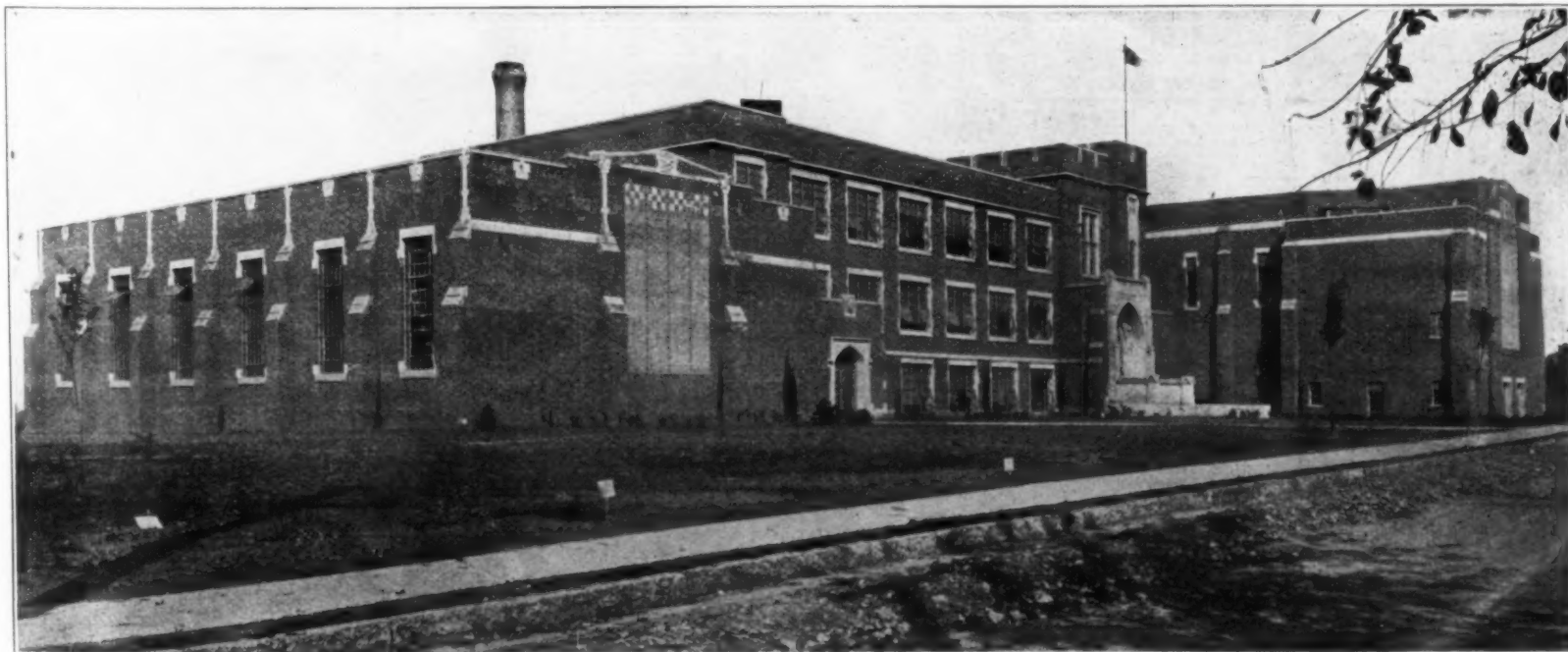
On the main floor are situated the study halls two in number, the library, the "little theatre," the gymnasium and auditorium, the offices and teacher and student rest rooms.

The library is situated in the brightest corner of the building. It is square with shelves for five thousand volumes and contains racks for newspapers and magazines. It holds 50 students at a time. The study halls accommodate 100 students each.

The gymnasium is one of the finest in the state. The floor measures 75 feet by 105 feet. The ceiling is 22 feet from the floor. It provides for a standard basketball court and has a seating capacity of 1000. The walls are finished in terra cotta brick as attractive as finished wood. Immediately below the gym are modern shower-bath rooms with athletic lockers. Between these two sections is a magnificent swimming pool which, when completed, will be one of the best features of the building.

The offices consist of a suite of three rooms, the principal's office, the main office with the secretary's department, bulletin boards and table for committee meetings and a small office occupied at present by the supervisor of home economics and the cafeterias of the Senior, Washington and Jefferson schools.

Beside these there are many classrooms for the academic work and smaller rooms to house each of the school papers and other activities that need a location. In the tower is a large room for band practice.



JEFFERSON INTERMEDIATE SCHOOL, DUBUQUE, IA.

J. W. Royer, Architect, Dubuque, Ia., and Urbana, Ill.



O. P. FLOWER.
Superintendent of Schools,
Dubuque, Ia.

The appreciation of the students for this place of learning is second to none. It may be typified by this ode written by a Senior:

LEARNING'S CASTLE
Margaret Bancroft '24

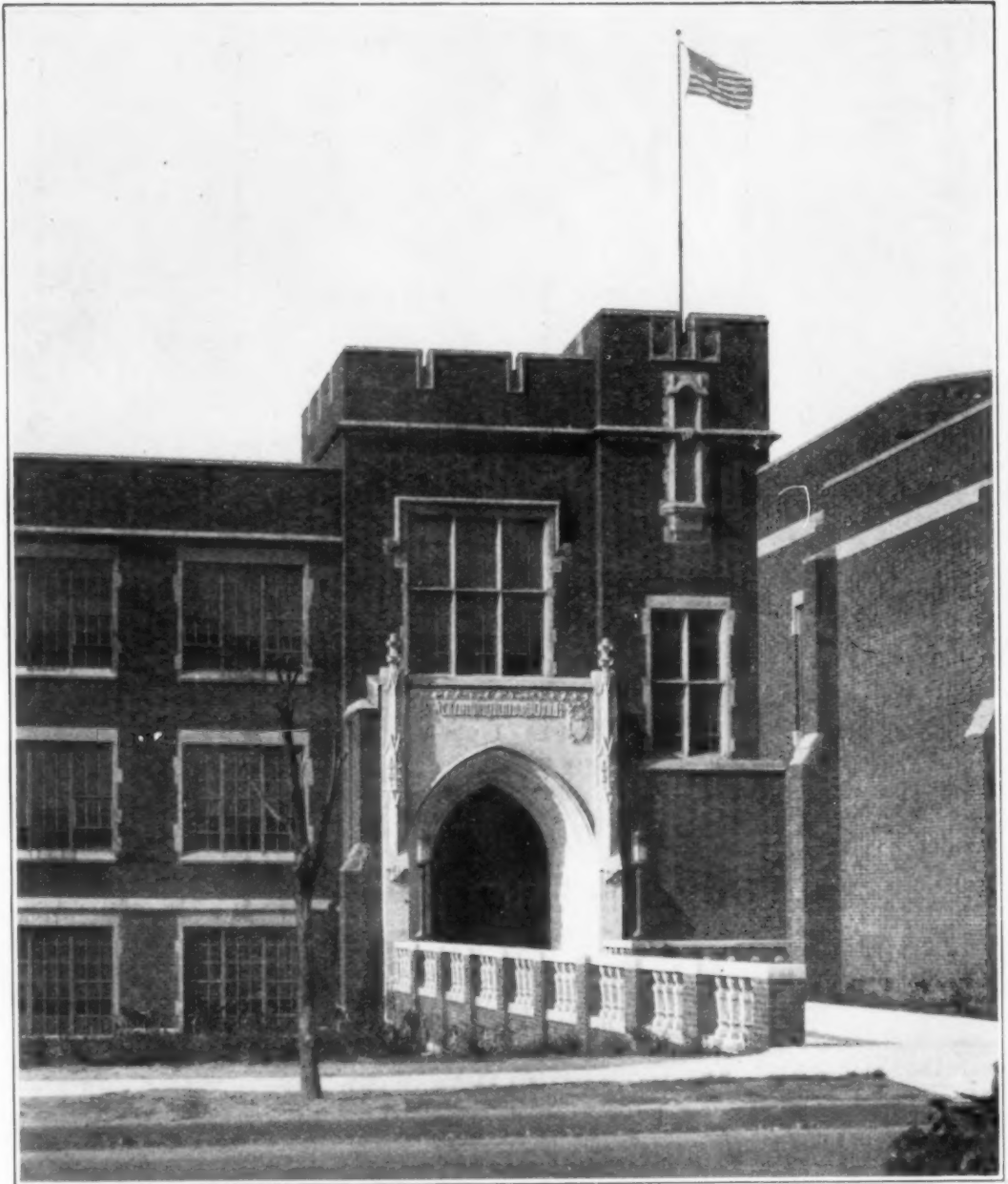
On the hilltop nature revels far and wide.
Winds, sunshine, and shadows
Touch a castle built in pride,
With the wide, blue sky above it, on a morning
bright and fair.
We are glad, yes, proud we built you
High on the hilltop there.

From the castle's many windows there are pictures beauty frames
Be it autumn, winter, springtime,
With a zest that nothing tames.
There's a glimpse of hills and valleys with the river in between
Where the sunshine chases shadows
And the mists that intervene.

May the sun forget you never
With the glory that you wear
With the dusk and twilight darkening
But to soften, make more fair.
May the years be kind unto you
As time flows on apace.
May the good God cherish and keep you
Out in that open space.

BIDS CALLED FOR LOS GATOS SCHOOL

Final specifications have been approved by the Los Gatos, Calif., High School and bids called for. The new school is designed in the classic style of architecture and is a model of its type. There will be an auditorium seating 800 people; also a little theatre, complete science and academic department for a school of 500



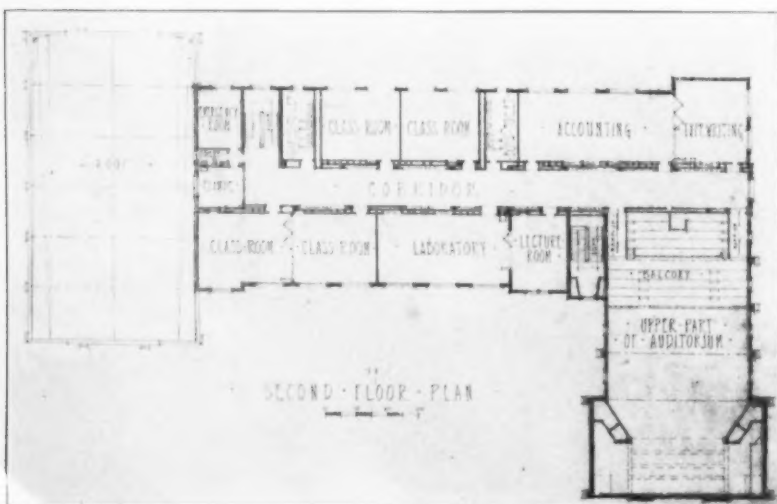
ENTRANCE DETAIL, WASHINGTON INTERMEDIATE SCHOOL, DUBUQUE, IA.
J. W. Royer, Architect.

pupils. Construction will be of reinforced concrete, with terra cotta trim. W. H. Weeks, of San Francisco, is the architect.

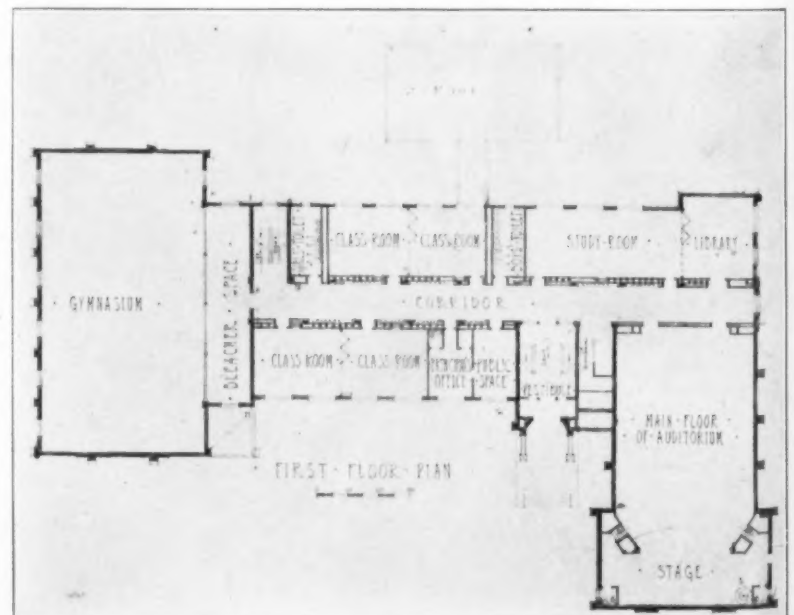
San Francisco's school building program authorized under the \$12,000,000 bond issue voted two years ago, was launched recently when architects were appointed by the Board of Public Works and instructed to draw plans for three large school structures.

Architect John Reid, Jr., was appointed to draw plans for the Dudley Stone School, an immense modern building to be erected at Waller

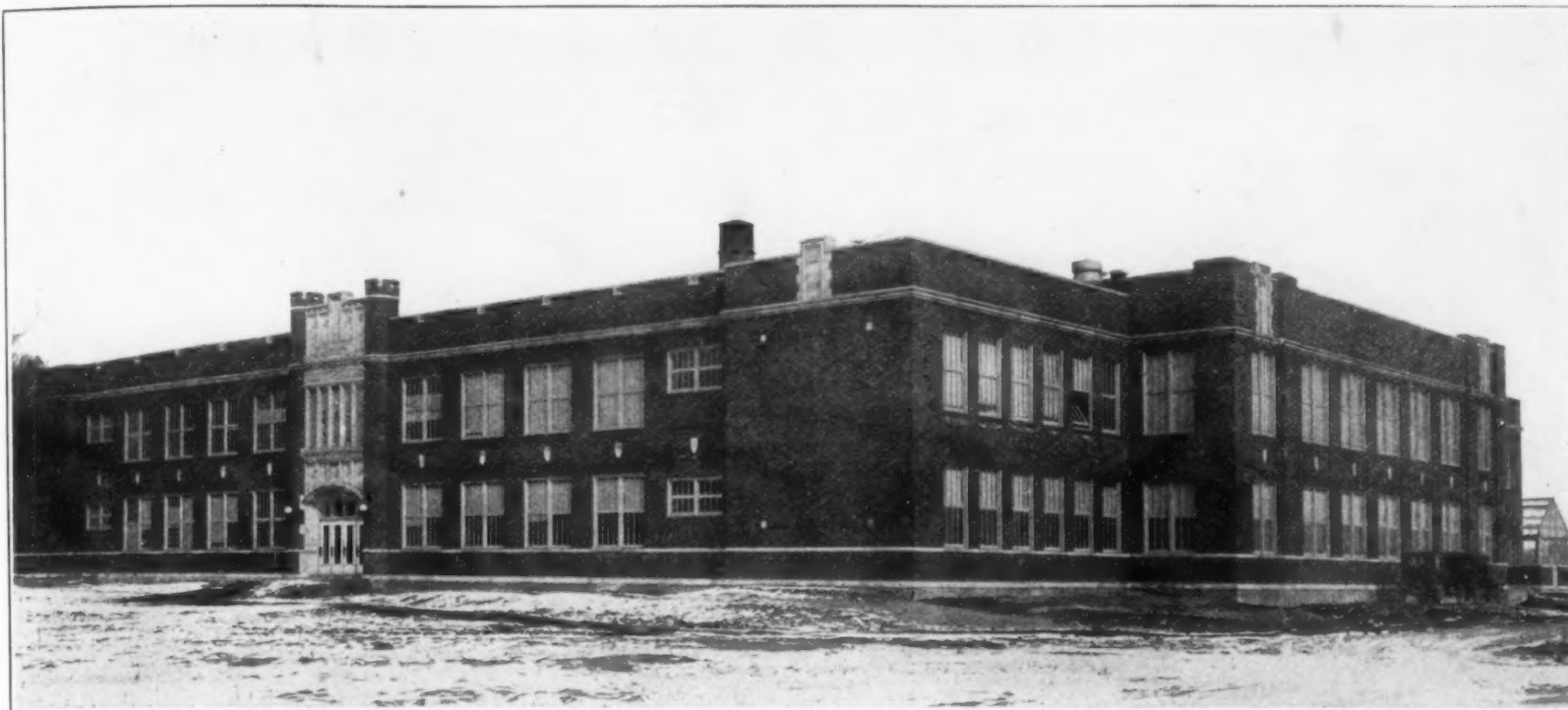
and Masonic Ave. Plans for the Lick-Noe school will be prepared by Architect Albert Lansburg. The proposed structure which is to take the place of the two present schools, the Lick and Noe, will be designed to accommodate the combined enrollment. Another combination of two schools in one large building will be the Douglas-Everett School to take the place of the present Douglas School and Everett School. Bakewell & Brown, the architects of the San Francisco city hall, have been appointed to draw plans for the building.



SECOND FLOOR PLAN, WASHINGTON AND JEFFERSON INTERMEDIATE SCHOOLS, DUBUQUE, IA.



FIRST FLOOR PLAN, WASHINGTON AND JEFFERSON INTERMEDIATE SCHOOLS, DUBUQUE, IA.



DUNDEE COMMUNITY HIGH SCHOOL,
CARPENTERSVILLE, ILL.

J. C. Llewellyn & Co.,
Architects, Chicago, Ill.

THE DUNDEE COMMUNITY HIGH SCHOOL The Dundee Community High School at Carpentersville, Ill.

During the past five years the state of Illinois has been developing an interesting type of community high school, which joins in a single educational institution the smaller towns and the surrounding farming communities. These schools are in the best sense of the term community schools and are monuments to the enthusiasm of the town and country people of Illinois for education.

One of the finest institutions of this type, both educationally and from the standpoint of the plant in which it is housed, is the Dundee Community High School at Carpentersville, Ill. The institution is presided over by Mr. Osher Schlaifer, of Dundee, Ill., and its principal is Miss Ada M. Andrews. It serves four towns—East and West Dundee, Carpentersville and Algonquin, and the surrounding rich agricultural district.

The Location of the Building

The building stands high on a bluff overlooking the Fox River and facing one of the main thoroughfares of Illinois, the Fox River Trail.

It may be seen from miles around, and from any one of its windows there is an impressive view in every direction.

The school property embraces a tract of land fourteen and one-half acres in size and ample for every school need. A portion of the land will be converted into an athletic bowl, terraced on the sides, and arranged for school games and athletic sports. The photograph of the exterior of the building does not give a clue to the interesting planting which has been begun and which will convert the entire site into a real beauty spot.

The Building

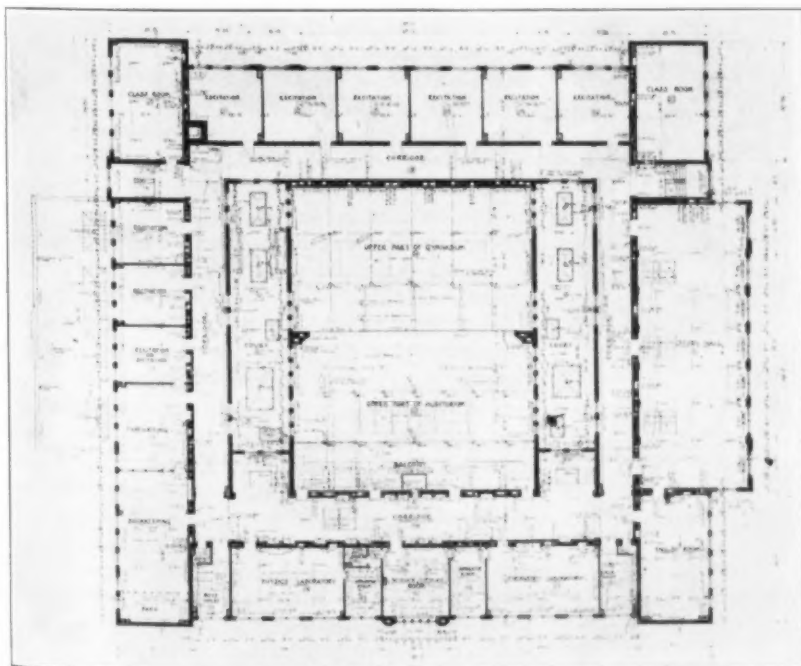
The building was financed by a bond issue of \$200,000 on the territory which the school district includes. An additional sum of \$110,000 is being raised by direct taxation of \$38,000 levied in 1922; \$28,000 levied in 1923; \$18,000 levied in 1924 and \$8,000 in 1925.

The building was designed by the firm of J. C. Llewellyn & Co., Chicago, and is entirely fireproof, being constructed of concrete and brick. It is 226 feet wide and 186 feet deep. There is no basement, except for a small space occupied by the boiler and ventilating appara-

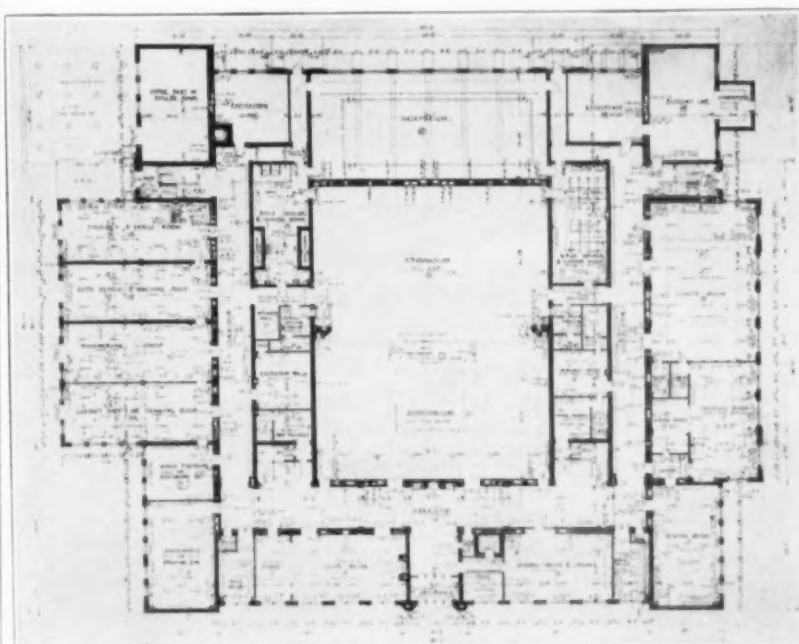
tus, heating ducts and the entire first floor is devoted to assembly, physical education, shops and work rooms, laboratories, household arts work and administrative offices.

In planning the first floor special attention has been given to the community character of the structure and its use outside of regular school hours by various groups interested in recreational, community, and civic activities. To the right of the main entrance there is a superintendent's office and immediately behind it a large library room. To the left of the entrance there is a club room with stage, which serves not only for various school societies, for music classes, etc., but also for small community gatherings.

The south wing of the first floor is devoted to a sewing room, a large cooking laboratory, a lunchroom, a lunchroom kitchen and serving room, a principal's office, a bookstore, a teachers' room, an agricultural and biological laboratory, and a recitation room. The north wing is given up to a series of four shops for wood working, mechanical drawing, automobile repair and machine shop practice, and foundry and forging. In this same wing there are a room de-

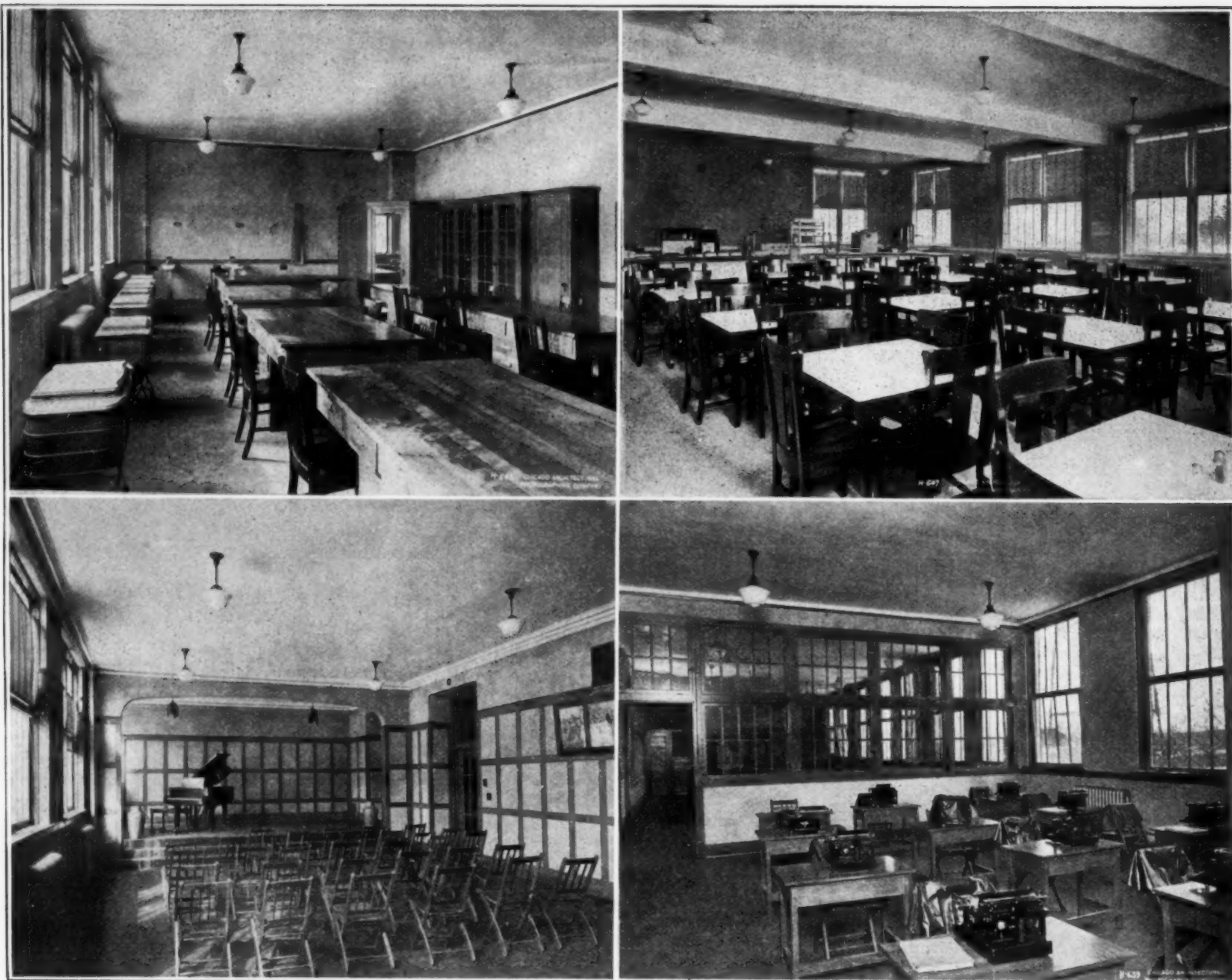


Second Floor Plan.



First Floor Plan.

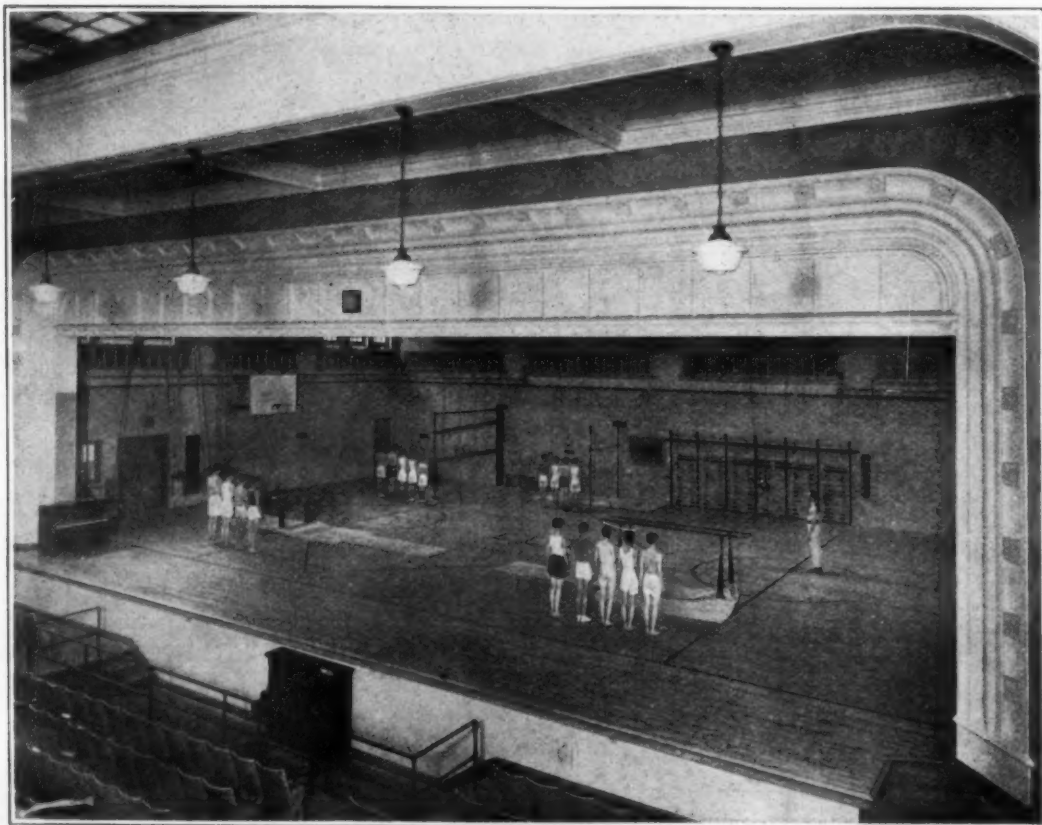
FLOOR PLANS OF THE COMMUNITY HIGH SCHOOL, CARPENTERSVILLE, ILL. J. C. Llewellyn & Co., Architects, Chicago, Ill.



(Above) Sewing Room. (Below) Music Room.

(Above) Cafeteria. (Below) Commercial Room.

INTERESTING ROOMS IN THE COMMUNITY HIGH SCHOOL, CARPENTERSVILLE, ILL.

AUDITORIUM STAGE AND GYMNASIUM, COMMUNITY HIGH SCHOOL, CARPENTERSVILLE, ILL.
J. C. Llewellyn & Co., Architects, Chicago, Ill.

voted to mathematics and three recitation rooms.

The entire center of the first floor is occupied by the auditorium and gymnasium, and immediately back of these there is a large swimming pool. The auditorium and the gymnasium are so related to one another that the gymnasium serves as the stage for the auditorium, and the latter serves as space for the spectators at basketball games and other indoor athletic exhibitions. The auditorium measures 76 feet by 47 feet and will comfortably seat on the main floor and gallery over 900 persons. The room is equipped with an orchestra pit, a motion picture booth, and is in every respect a very satisfactory room for theatricals, lectures, and public meetings. The lighting which comes from windows set high in the side walls and from skylights, is ample for all daylight purposes.

The gymnasium measures 76 feet by 46 feet and is marked for a basketball court and an indoor baseball diamond. It has a full complement of the usual gymnasium apparatus so arranged that it may be put out of sight when the room serves as a stage for other than gymnastic or athletic exhibits. The gymnasium may be separated from the auditorium proper by means of soundproof curtains, which are covered from the auditorium side by heavy velour drapes.

(Continued on Page 143)

Rooms and Equipment for Industrial Arts

Samuel A. Challman, State Inspector of School Buildings, St. Paul, Minn.

Training in the industrial arts has become an integral part of our public school curriculum. The establishment of the junior high school as a part of our school organization is very largely due to an insistent demand for the recognition of skill in useful occupations on the same basis as the traditional subjects, a recognition which it was somewhat difficult to secure under the old form of educational organization.

Beginning with what we ordinarily term the seventh grade, the child has reached a stage, when his physical vision and his muscular control have developed to such an extent that the training of both eye and hand can be undertaken with some degree of assurance of success, in case he has any aptitude whatever for industrial pursuits. If public school education is to give him an all around opportunity for the best kind of training, he ought to have a chance to demonstrate either that he possesses or that he lacks the requisite ability to perform some of the more common industrial tasks. If he demonstrates ability and chooses to continue along the line of some useful occupation, the way to the vocational school or the apprenticeship is open to him at the proper age. It is not intended that the public school in its elementary and secondary courses should do more than merely acquaint him with the main processes of the more common occupations in industrial life. But to do this, it is essential that reasonable physical requirements be met both as to suitable rooms and proper equipment.

There is the danger that, in our enthusiasm for industrial arts, we may be too generous with floor space and too lavish with equipment. It is, therefore, quite essential that the limitations within which the public schools outside of vocational training which the larger school systems are justified in providing, can offer industrial courses be properly appreciated. The supply of qualified teachers, the length of the instruction period, the size of classes, the age of pupils, the methods of instruction, and the general atmosphere of the school are all factors to be considered. Without in any way casting any reflection upon many able teachers who are employed in this work, the fact remains that, while some are master workmen, the majority are not. The periods for work in industrial arts are short, though they may be as long as the pupils' time and physical strength permit. The size of classes cannot always be restricted to the number that can best be served by one instructor, but must be governed largely by such considerations as are determined by the general plan of the school organization. If the class units are large in the other departments of the school, it brings about a similar situation in the department of industrial arts. Most pupils will begin their work in industrial arts about the age of twelve when they are influenced more by impulse than by deliberation. Classroom methods must of necessity predominate, if, within the assigned period, a pupil is to accomplish any appreciable amount of work. This has its advantage in teaching individual responsibility, but it has its disadvantage in not putting pupils on their guard against errors and poor workmanship. Finally the school atmosphere is essentially different from that of the commercial shop, and, while principles and processes may be taught in school, the responsibility for their interpretation is brought home with greater significance in the shop than is possible in the school. The actual work in the shop has a more serious aspect than can very well be given to it in the school.

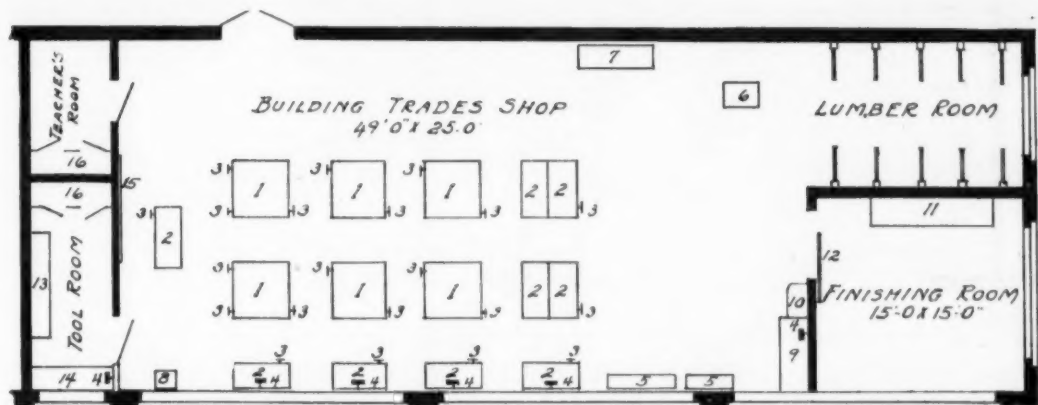


Fig. 1. A Building Trades Shop of Cabinet Work, Carpentry, Elementary Concrete Construction, Painting and Wood Finishing and Elementary Electric Work. Designed by the Division of Vocational and Extension Education, New York State Department of Education. Total Floor Area 1,750 Square Feet.

1. Double Bench 48" x 48"
2. Single Bench 48" x 24"
3. Vise
4. Electric Wall Plug
5. Lathe 60" x 12"

EQUIPMENT SCHEDULE.

6. Variety Saw 30" x 22"
7. Jointer 66" x 18"
8. Grinder 18" x 16"
9. Glue Bench 60" x 28"
10. Sink 30" x 20"
11. Zinc Covered Bench 9' x 2'
12. Sliding Metal Covered Door
13. Tool Rack
14. Bench 72" x 22"
15. Sliding Blackboard 8' long
16. Cabinet 72" x 22"

On the other hand it is useless to attempt to carry on industrial work in rooms of inadequate size or with insufficient equipment. Just what is included by these limitations may be somewhat difficult to determine, because so much depends upon the size and character of the school and the industrial possibilities of the community. What may be ample in one case may be scant in another. And still some attempt should be made, in the interest of the type of industrial training offered, to fix some minimum limitations, below which it would be educationally indefensible to go. Four states in the Union—there may be others—have sought to establish certain minimum standards for the guidance of schools offering work in industrial arts. These states are New York, Michigan, Minnesota and Pennsylvania.

New York

The New York bulletin on industrial arts applicable to grades seven, eight and nine contains the following requirements: "(a) Floor space for shop 1600 square feet; for shop with space for recitation 1650 square feet; for storage and supply closet, 100 square feet; for drawing room 1200 square feet. (b) Partitions: for separating all shops and drawing rooms, walls that can be moved easily, should it be deemed advisable in future years to readjust the original layout. (c) Light and power: daylight

from one side, if possible; large windows placed close together as in factory construction; individual electric lights for all benches and machines, if other system of lighting is not adequate; outlets for all electrically driven machines; daylight proof curtains and wall sockets for lantern in all rooms used exclusively for instruction or for drawing and recitation. (d) Black board: each shop and drawing room should have 80 square feet of blackboard. (e) Cork board: each drawing room should have not less than 80 square feet of cork board.

"Schools equipping for industrial arts should make provision either for a two-room or a multiple room layout.

"If a two-room layout is chosen it should consist of a shop with tool and supply storage closet adjoining and a drawing room with storage closet adjoining, the drawing room serving the purpose also of a recitation room. Both shop and drawing room should be large enough to accommodate the necessary benches, cupboards, machinery, supply racks and other equipment. Supply closets should be sufficient to contain full length stock. If a room is to be used for drawing primarily; the shop should be large enough to include a section of floor space set aside for recitation purposes. This space should be sufficiently large to accommodate a teacher's bench, blackboard, bookcases and individual seats

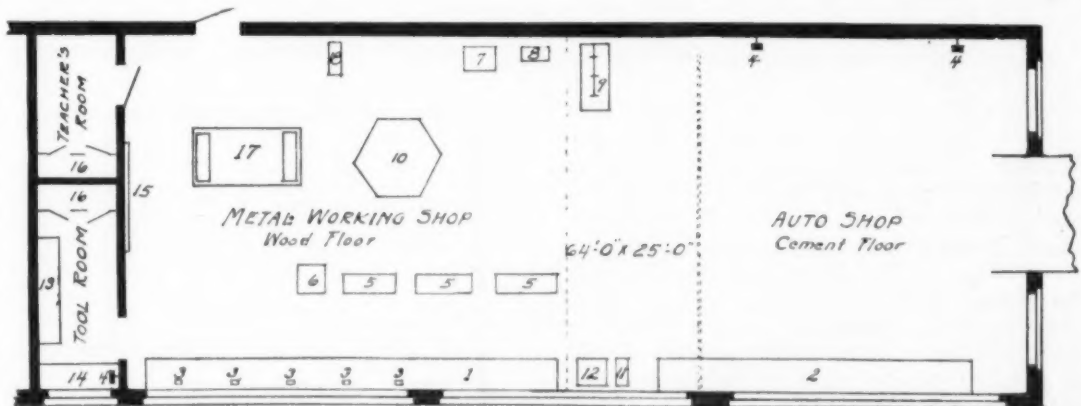


Fig. 2. A Metal Trades Shop, for Sheet Metal Construction, Elementary Machine Shop Practice, Auto Mechanics and Heat Treatment of Metals. Designed by the Division of Vocational and Extension Education of the New York State Department of Education. Total Floor Area 1,750 Square Feet.

1. Bench 29' 6" x 2'
2. Bench 23' x 2'
3. Gas Buzzers
4. Electrical Plugs
5. Lathe 54" x 18"
6. Shaper 24" x 24"
7. Drill Press 30" x 18"

EQUIPMENT SCHEDULE.

8. Cut Off Saw 24" x 12"
9. Wash Trough 5' x 2'
10. Sheet Metal Machine Bench 5' 6" x 6"
11. Anvil 24" x 10"
12. Furnace 24" x 26"
13. Tool Racks
14. Bench 6' x 2'
15. Sliding Blackboard 8'
16. Cabinet 6' x 2'
17. Sheet Metal Table with Folder and Roller 8' x 4'
18. Shears 40" x 8"

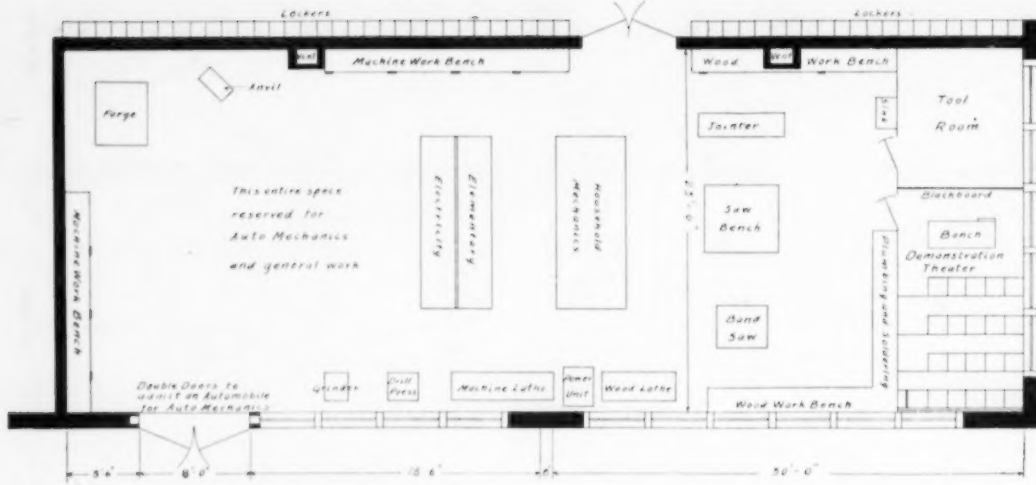


Fig. 3. General Shop for Wood Working, Metal Working, Auto Mechanics, Household Mechanics, and Elementary Electricity. Designed by the Department of Public Instruction of the State of Michigan. Total Floor Area 1,395 Square Feet.

One Table for Household Mechanics
10' 11" x 4' 6"
Two Tables for Elementary Electricity
10' 11" x 2' 2"
Machine Work Bench 15' 6" x 1' 6"
Wood Work Bench 13' x 1' 6"

EQUIPMENT SCHEDULE.

Forge 48" x 40"
Drill Press 21" x 24"
Power Unit 30" x 24"
Saw Bench 55" x 51"
Plumbing and Soldering 10' x 1' 6"
Anvil 24" x 12"

Sink 24" x 15"
Grinder 22" x 18"
Machine Lathe 6' 6" x 21"
Band Saw 39" x 32"
Jointer 66" x 18"
Wood Lathe 54" x 22"

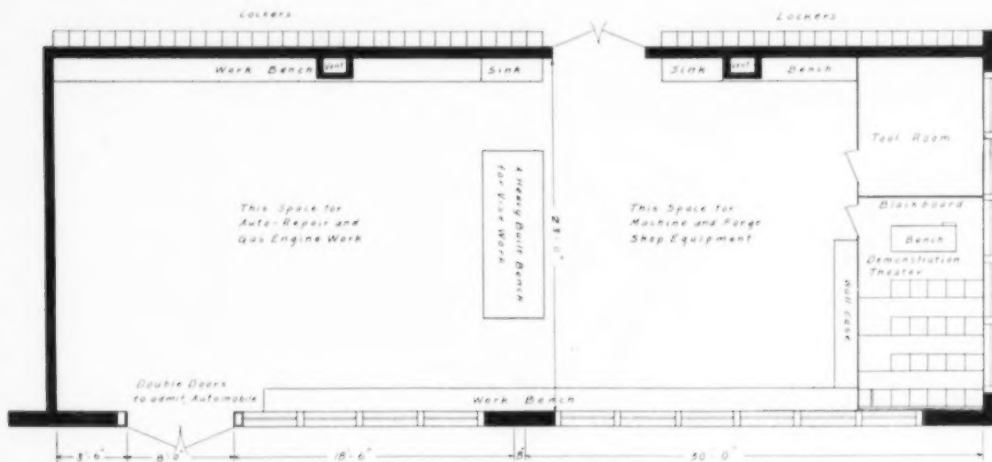


Fig. 4. A Standard Auto Mechanics and Machine Shop. Laid out and recommended by the Department of Public Instruction of the State of Michigan. Total Floor Area 1,395 Square Feet.

EQUIPMENT SCHEDULE.

Heavy Built Bench for Vise Work 11' x 4'
Work Bench 28' x 18"
Bench 6' x 18"

Work Bench 38' 8" x 18"
Sink 4' x 18"
Wall Case 9' 8" x 18"

for all the pupils. The drawing room should communicate directly with the shop or shops.

"If a multiple-room layout is chosen, it should consist of one or more drawing rooms and as many shops as the size and needs of the community require. In schools where several shops are maintained, one supply room may serve two shops, provided it opens into both. The shops should be arranged in units, wherever this is possible, a metal unit, an electrical unit, a printing unit, etc.

"Equipment includes (a) shop, (b) drawing room, (c) furniture, (d) books, (e) tools and machines, (f) provision for supplies. The shop and drawing room have been already discussed. Benches and seats as well as desks and tables should be of good quality and adapted to the special uses and the size of the occupants. There should be a complete though perhaps a limited supply of reference books dealing with the various types of work being undertaken. These should be for the pupil's rather than for the teacher's use. Tools and machines should be sufficient for the types of work undertaken and they should be kept in good condition. Supplies should be adequate at all times."

Two floor plans herewith shown, prepared by the Division of Vocational and Extension Education, and furnished by Mr. Frank H. Wood, State Director of School Buildings and Grounds Division, indicate how these requirements may be met to advantage in planning new school buildings.

Michigan

Bulletin No. 52, issued by the Department of Public Instruction of Michigan and entitled "School Buildings, Equipment, and Grounds," while not specific in regard to sizes of room, is very complete in its enumeration of the equipment essential to the work that is required in industrial-arts courses. Three suggestive floor plans with equipment indicated have been prepared for the Michigan schools and have been made available for this article by Geo. N. Otwell, State Superintendent of Rural Education.

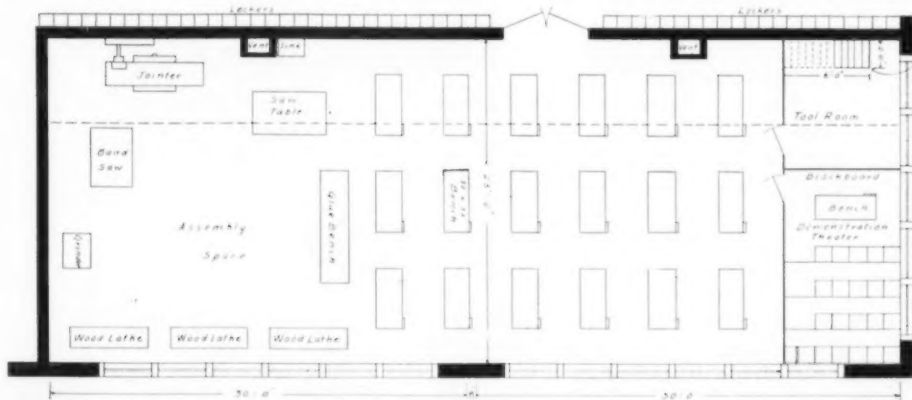


Fig. 5. General Shop for Wood Work and Farm Mechanics. Laid out and recommended by the Department of Public Instruction of the State of Michigan. Total Floor Area 1,395 Square Feet.

EQUIPMENT SCHEDULE.

Eighteen Single Benches with Vises 52" x 22"
Glue Bench 8' x 24"
Grinder 30" x 24"
Jointer 7' x 4'

Three Wood Lathes 66" x 18"
Band Saw 50" x 36"
Saw Table 63" x 36"

The following extracts from this bulletin are worthy of note:

Junior High School, Grades 7-9. "Prevocational manual arts should begin in the seventh grade. Throughout the junior high school period its aim is distinctly prevocational and therefore as many different lines of work as possible for tryout purposes should be provided.

"In the smaller cities where only one shop can be provided, that shop should be a general shop providing, in addition to the usual woodworking equipment, facilities for teaching household mechanics and elementary electrical applications in the home. The scope of such a shop can be greatly increased by the addition of a metal turning lathe, a soldering and riveting bench, and a forge and anvil. One end of the shop may be used for auto mechanics. In cities in which a vocational course in agriculture is taught, farm mechanics should be a part of the household mechanics course and for this purpose woodworking, metal working, and auto mechanics equipment is well adapted.

"In the larger school systems where two shops or more are possible, one should be a general shop and the others should provide more advanced work in metal, electrical work, auto mechanics, and printing."

Senior High School, Grades 10-12. "In the senior high school the work should become more specialized and vocational in nature. A metal working shop for a senior high school should provide for auto mechanics, a woodworking shop for cabinet making and carpentry, and an electrical shop and print shop for advanced work in these two lines. It is possible to conduct classes of senior high school grade in the shops described above for the junior high school.

"The equipment and furniture for woodworking is based on a class of 24 students. In new buildings, single benches are recommended and should be arranged in rows with space between to insure freedom of work. The light should come over the left shoulder. In old buildings where it is necessary to economize space double benches may be used. In this case artificial light is usually necessary as the boys stand facing each other. Wherever possible the machines should be placed in one end of the room and floor space allowed for assembly work. No shop is complete without a tool room and provision must be made somewhere for wash-room and lockers. The finishing room must be entirely separate from the shop and as dust proof as possible. Bleacher seats are recommended as they provide a place for seating during demonstrations as well as a place for pupils to make notes and drawings."

Minnesota

The minimum requirements for Minnesota are found in a bulletin entitled, "Laws and Rules governing School Buildings and Sites,"

issued by the Division of Buildings and Sanitation of the Department of Education. These requirements are as follows:

"The space provided for general industrial work will depend to a great extent upon the type and amount of work to be offered, but in no case shall the floor area be less than eleven hundred twenty (1,120) square feet. The space provided may be left in one room or may be divided into separate rooms in accordance with local requirements.

"Whenever power is to be used, provision must be made for proper connections. Any special features required by special types of work—as gas exhaust flues or dust collecting systems—should be provided for when the building is constructed.

"A door opening, eight feet wide, with double doors should be provided, giving access into this department from outside, making the whole opening available for the bringing in of large equipment or materials to be worked upon.

"Storage rooms adjoining the main room are desirable. The essential idea underlying the planning of the General Industrial room should

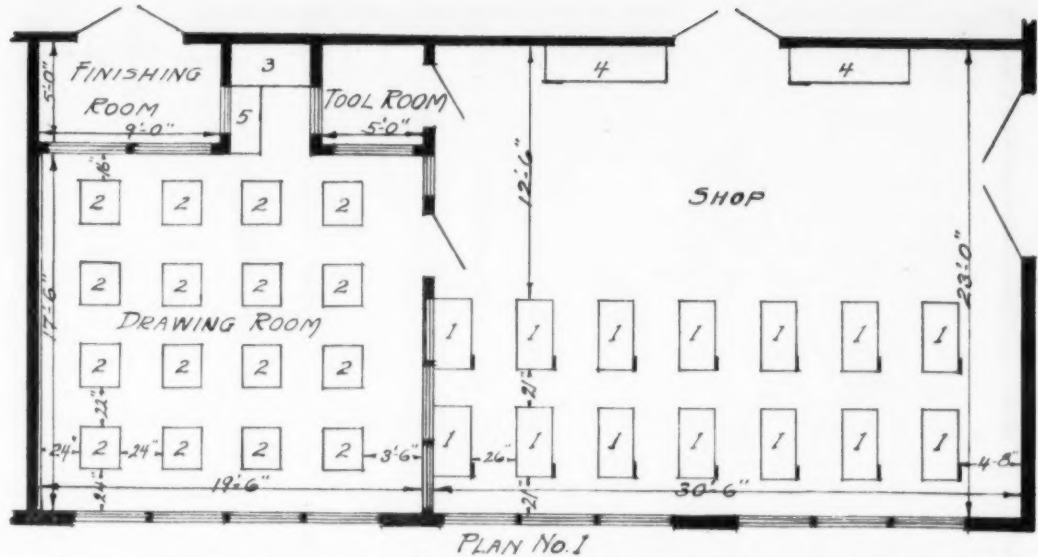


Fig. 6. Small General Shop for Carpentry, Cabinet Work, Farm Repair Work, and Mechanical Drawing for Classes of 16 Pupils. Minimum Layout for Space and Equipment, as Laid Out by the Department of Education, State of Minnesota. Total Floor Area 1,150 Square Feet.

EQUIPMENT SCHEDULE.

1. Single Wood Working Bench 42" x 22"
2. Drawing Table 26" x 24"
3. Case in accordance with local requirements
4. Cabinet Benches 6' 6" x 2'
5. Teacher's Desk 42" x 22"

Minimum Space and Equipment

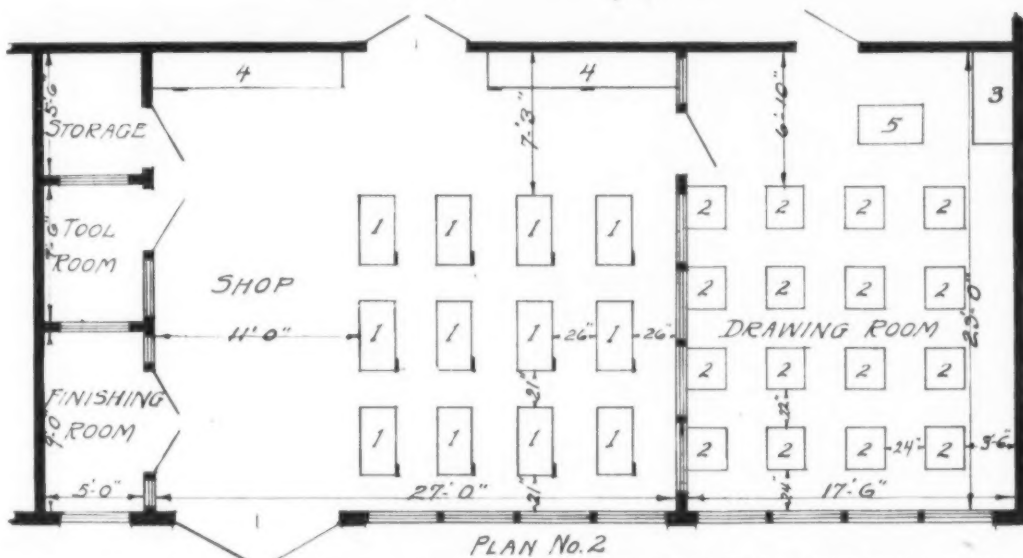


Fig. 7. Typical General Shop for Carpentry, Cabinet Work, Farm Repair Work, and Mechanical Drawing for Classes of 16 Pupils. Minimum Layout for Space and Equipment. Prepared by the Department of Education, State of Minnesota. Total Floor Area 1,150 Square Feet.

EQUIPMENT SCHEDULE.

1. Single Wood Working Bench 42" x 22"
2. Drawing Table 26" x 24"
3. Case in accordance with local requirements
4. Cabinet Benches 9' x 2'
5. Teacher's Desk 42" x 22"

be that of making it possible for the instructor most easily to keep in continual charge of all work going on."

In Minnesota annual state aid to the amount of \$500 is made available to all school districts that comply with the requirements stated above and conduct a department according to certain standards fixed by the State Board of Education.

In order to indicate how the minimum requirements as to the physical plant may be met, three suggestive floor plans with spaces indicated for equipment have been prepared by D. M. Schweickhard, State Supervisor of Trade and Industrial Education. These floor plans, of which prints are included in this article, have been worked out after a careful review had been made by Mr. Schweickhard of the local situations in the various school districts of the state. A bulletin embodying an outline of the work to be done in General Industrial Training has just been published by the State Department of Education. This bulletin contains the following explanation of these floor plans: "It must be remembered, in examining and criticising these plans, that this is not an attempt to set forth an elaborate arrangement for a school attempting trade training on an extensive basis; it is rather an attempt to show what may be done with

department, may be able to have the whole under inspection at all times. Glass partitions between all interior rooms, provide that pupils may be working in all parts of the shop at one time and still be under supervision of the instructor. Schools able to provide more than the minimum amount of space may wish to enlarge upon one of these arrangements, or to provide additional rooms, but wherever the instructional work is to be under one instructor, the principles upon which these plans are based, should be rather closely adhered to."

Pennsylvania

In a bulletin issued by the Bureau of Vocational Education of the State Department of Public Instruction of Pennsylvania, entitled "Bulletin No. 4, Trade and Industrial Education, Series No. 2, Industrial-Arts Education in Grades 7-8-9, with special application to the needs of the smaller schools," the following suggestions are made for junior high schools of varying sizes:

1. For schools containing 100 to 200 boys: Option No. 1—one general shop, one drafting room (classroom will do); Option No. 2—Large room containing both.
2. For schools containing 200 to 400 boys:

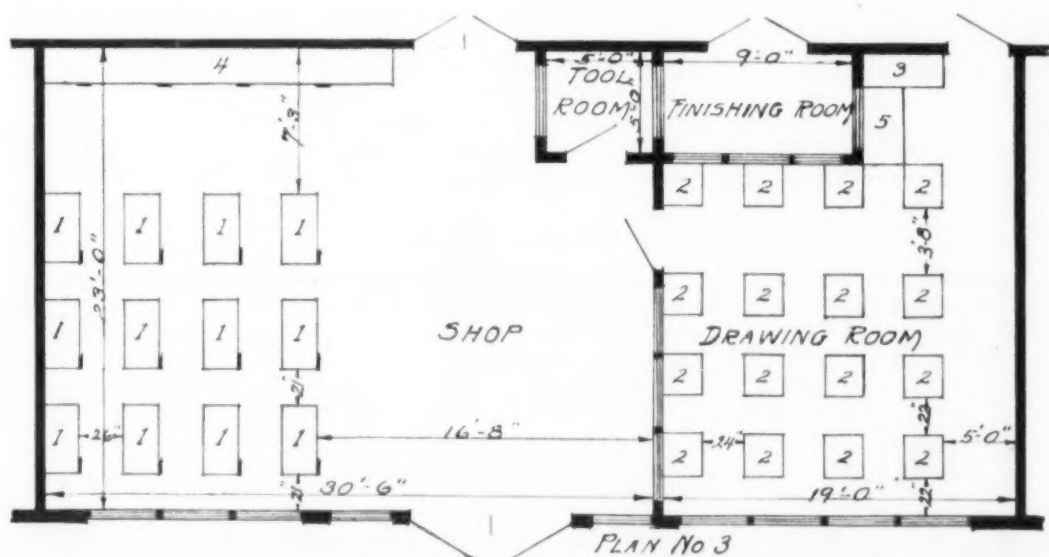


Fig. 8. Suggestive Plan for Small General Shop for Carpentry, Cabinet Work, Farm Repair Work and Mechanical Drawing for Classes of 16 Pupils. Layout for Minimum Space and Equipment. Prepared by the Minnesota State Department of Education. Total Floor Area 1,150 Square Feet.

EQUIPMENT SCHEDULE.

1. Single Wood Working Bench 42" x 22"
2. Drawing Table 26" x 24"
3. Case in accordance with local requirements
4. Cabinet Bench 18' 6" x 2' with four vises
5. Teacher's Desk 42" x 22"

minimum facilities. One highly necessary feature in such an arrangement is that one teacher, who must have charge of the entire

Option No. 1—One general shop (containing wood and electrical work), one general shop (containing machine and sheet metal), one draft-

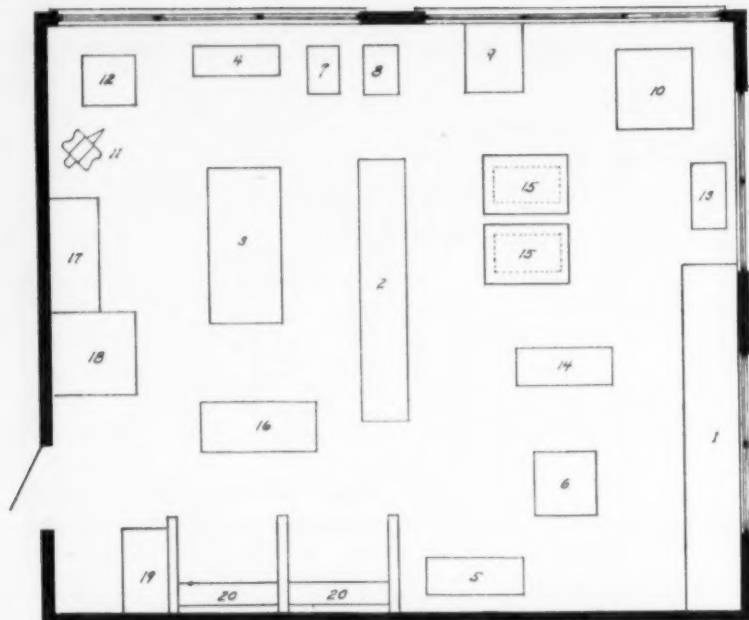


Fig. 9. Suggestive Plan for a General Shop for Industrial Arts including Concrete Construction, Blacksmithing, Sheet Metal Work, Electrical Work, Wood Work, Machine Work, and Printing. Layout Prepared by the Bureau of Vocational Education, Department of Public Instruction of Pennsylvania. Total Floor Area 864 Square Feet.

EQUIPMENT SCHEDULE.

- | | | |
|------------------------------------|----------------------------------|--|
| 1. Wood Working Bench 16' x 2' 6" | 7. Drill Press 2' 6" x 2' | 14. Table and Stock Cabinet 4' 6" x 1' 10" |
| 2. Machinist Bench 12' x 2' | 8. Grinder 2' 9" x 1' 9" | 15. Composing Sands 4' x 2' 10" |
| 3. Sheet Metal Table 7' 6" x 3' 6" | 9. Imposing Table 3' x 3' | 16. Electric Table 5' 6" x 28" |
| 4. Engine Lathe 4' x 1' 6" | 10. Press 3' 9" x 3' 9" | 17. Bench—Concrete 5' 4" x 28" |
| 5. Speed Lathe 4' 6" x 1' 9" | 11. Anvil 18" x 10" | 18. Mixing Board 4' x 4' |
| 6. Variety Saw 3' x 3' | 12. Forge 30" x 30" | 19. Teacher's Desk 4' x 2' 2" |
| | 13. Bench and Cabinet 3' x 1' 9" | 20. Wiring Booths 5' x 4' 6" |

ing room (classroom will do); Option No. 2—one general shop (containing four or more activities), one unit shop (where vocational specialization is needed), one drafting room.

3. For schools containing 400 to 600 boys: Same as for smaller school with the addition of another unit shop (electric or other suitable for Smith-Hughes classes).

4. For larger schools: a. For schools of large size one shop will be needed for each 200 additional boys or considerable fraction of this number. b. Vocational work which may be elected in the ninth grade will use one unit shop for each 40 boys.

"It is recommended that districts make use of the services of the State Department of Public Instruction, Bureau of Vocational Education, in planning equipments rather than to rely upon any standardized list. The bureau will take up each situation separately in view of the fact that local needs are not exactly alike in all districts.

"When a decision has been made as to the extent of equipment to be placed in a room, it is well to have a scale drawing made of the floor plan. Then in order that the equipment may be placed to the best advantage, the following procedure may be observed: Determine the size

of the benches, machines, and floor equipment. Draw these to scale in the form of small rectangles upon thin cardboard. Cut them out and place them around on the floor plan, securing them into place on the drawing board by means of ordinary pins. A number of combinations can be tried and when the final arrangement has been made, the equipment will then be placed to the best advantage. In providing for a forge it is important to see that it is placed with reference to chimney flues."

The bulletin lists the minimum equipment for eight typical activities for classes not exceeding five boys and limits the number of activities in a shop of about 27 feet by 40 feet to not more than five. It states, however, that from a practical standpoint it is probable that in the smaller schools not more than four activities can be successfully handled, even though more may seem desirable from an educational standpoint. A suggestive floor plan giving a typical arrangement for a general shop is shown in the bulletin and has been included among the drawings for this article.

The Composite Shop

It is evident from the extracts quoted, as well as from the periodical literature on the subject, that our ideas and aims with regard to indus-

MECHANICAL DRAWING

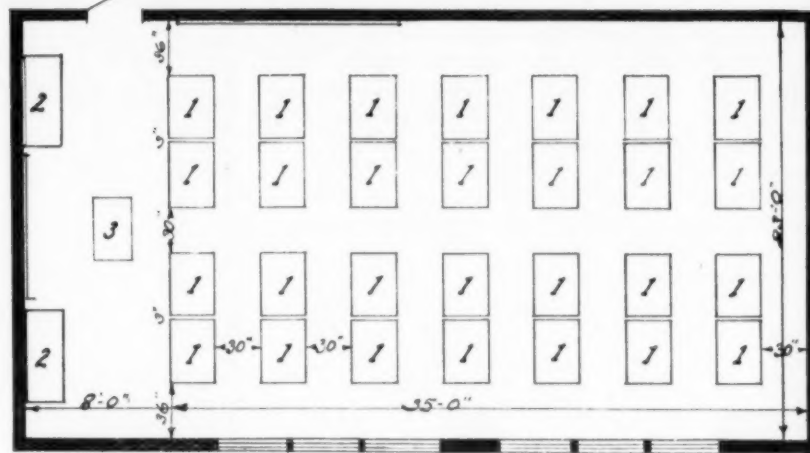


Fig. 10. Typical Arrangement of Drafting Tables in a Room with a Capacity for 28 Pupils. Prepared by the Department of Education of the State of Minnesota. Total Floor Area 805 Square Feet. Area for Each Pupil 28.7 Square Feet.

EQUIPMENT SCHEDULE.

1. Drafting Tables 42" x 30"
2. Cabinets for Drawing Boards 5' x 26"
3. Teacher's Desk 42" x 26"

trial training have undergone a marked change within a very few years. From a centralized interest along one line of industrial work we have gone into diversified activities, much after the fashion of the progressive grain farmer who has gone into diversified farming. The composite shop with its broader interests and its revelations of useful occupations presents a much larger and a better educational appeal. It is more in keeping with the general tendency of our present educational program.

As illustrations of how the idea has actually worked out, the following extracts from a statement by Robert A. Campbell, state supervisor of industrial education of New Jersey, are both interesting and enlightening: "Probably one of the best types of the 'composite shop' will be found in the Hackensack high school. The room is sufficiently large and so built that divisions may be made which will clearly distinguish sections of the shop as representing different types of work. In this room will be found a complete woodworking equipment with woodworking machinery installed. About the same amount of space is given over to sheet metal work, forging, cement work, electricity, and a moulding bench for the purpose of teaching foundry practice. The room is not partitioned to set off these units of industrial try-outs, but the benches have been carefully placed so that the boys sense a different environment when making initial contact with a number of the fundamental industries offered in a 'composite shop.' The justification for this organization in the school shops, particularly in the junior high school, is that 'there will be an opportunity for the pupils to explore several fields to see where they are fit.'"

"This type of work has been materially strengthened in Hackensack by making such projects as would involve a minimum amount of duplication in operation but in general give a wide range of operations in several activities. To illustrate: A steam engine was made that permitted simple operations in wood, sheet metal, forging, pattern-making, foundry (casting in soft metal), wood turning and thread cutting. In some cases the factory method was used for duplication of parts. Group instruction was employed with a foreman in charge of each group. Each group rotated from one activity to another. Consequently, all had a sampling of the medium mentioned. With this project came the development of the drawing and mathematics involved with the problem and a study of the science related to the project."

MECHANICAL DRAWING

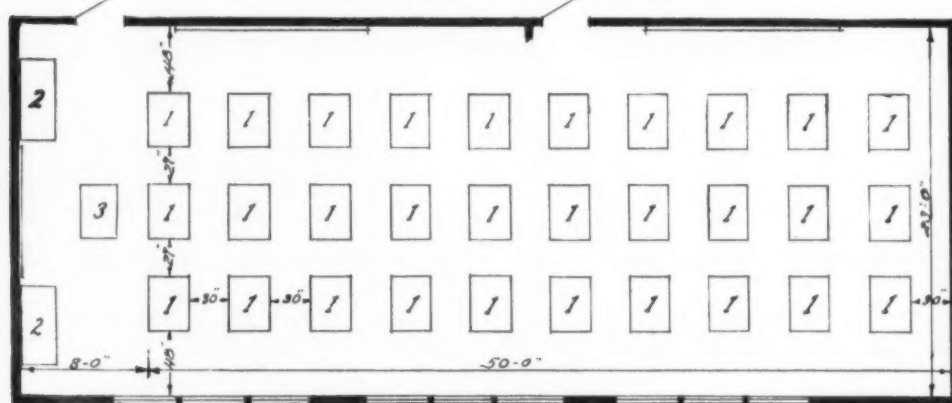
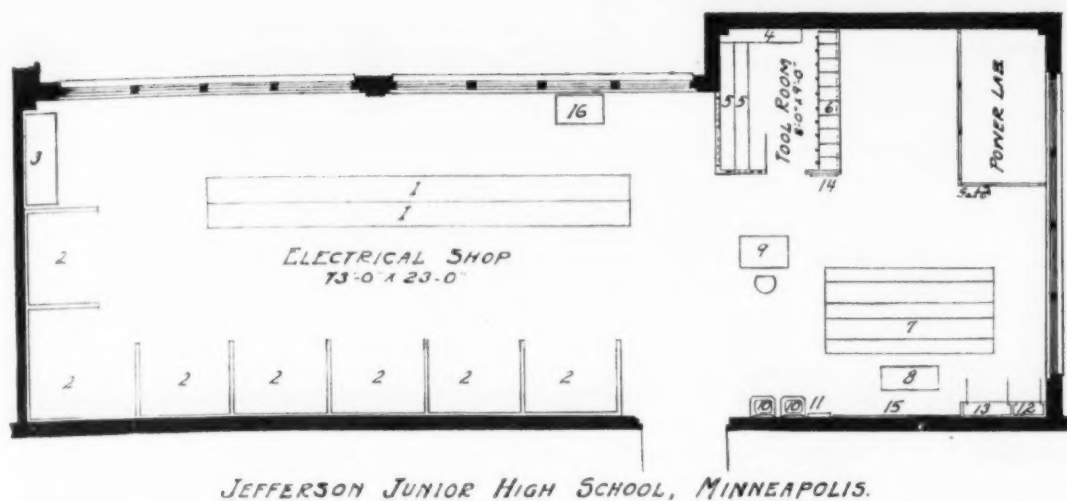


Fig. 11. A Spacious Drafting Room with Tables for 30 Pupils, Requiring a Floor Area of 38.3 Square Feet per Pupil.—Frequently Seen in New High School Buildings, but not Recommended as Economical or Essential for the Successful Work. Total Floor Area 1,150 Square Feet.

EQUIPMENT SCHEDULE.

- Drafting Tables 42" x 30" Cabinets for Drawing Boards 5' x 26" Teacher's Desk 42" x 26"

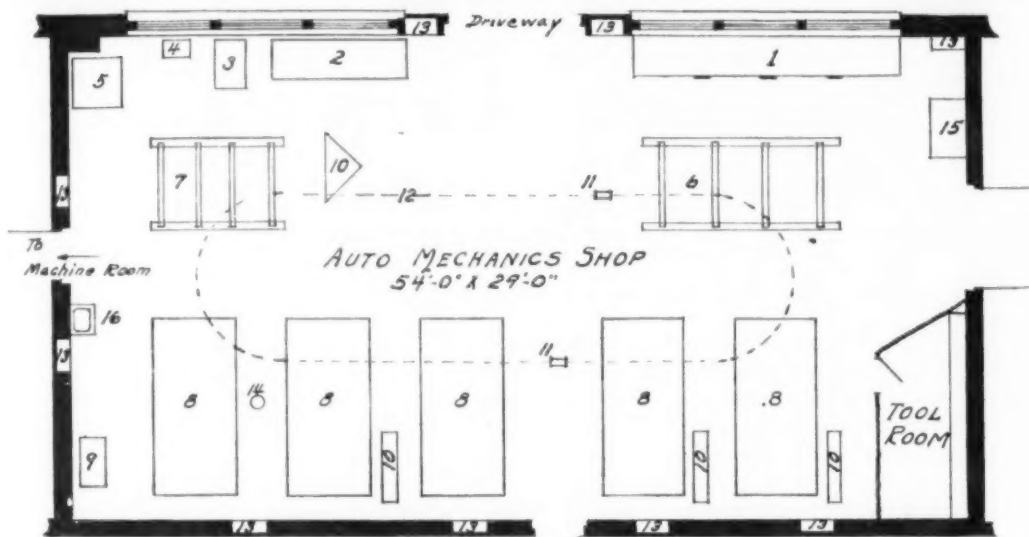


JEFFERSON JUNIOR HIGH SCHOOL, MINNEAPOLIS.

Fig. 12. Typical Arrangement of Modern Electrical Shop for Teaching Junior High School Classes as well as Vocational Classes. Total Floor Area 1,782 Square Feet.

EQUIPMENT SCHEDULE.

- | | | |
|---------------------------------------|--------------------------------------|----------------------------|
| 1. Bench—30' 0" x 3' 6" | 6. Tote Boxes, each 11" x 16" | 12. Wardrobe 2' x 1' 3" |
| 2. Wiring Booth 5' 6" x 6' 0" x 7' 0" | 7. Bleacher Seat 12' 3" x 6' | 13. Bookcase 4' 0" x 1' 3" |
| 3. Panel Board Case 6' 9" x 2' 6" | 8. Demonstration Bench 4' 2" x 1' 8" | 14. Corkboard 2' 0" |
| 4. Shelves 11" | 9. Teacher's Desk 3' 6" x 2' 4" | 15. Blackboard 10' 0" |
| 5. Bins 12" wide | 10. Lavatories 1' 9" x 1' 6" | 16. Lathe 3' 4" x 2' 0" |
| | 11. Towel Cabinet 1' 8" x 4" | |



EDISON JUNIOR-SENIOR HIGH SCHOOL, MINNEAPOLIS.

Fig. 13. Well Designed Room and Well Arranged Equipment for a Junior-Senior High School. Total Floor Area 1,566 Square Feet.

EQUIPMENT SCHEDULE.

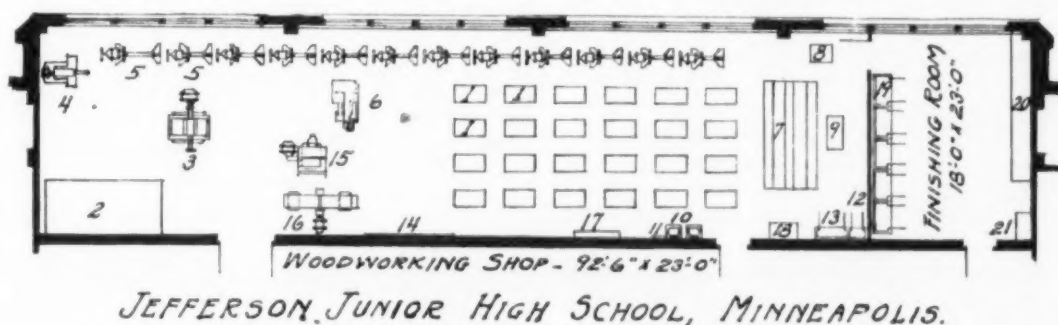
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|--|--|---|
| 1. Bench 16' x 28" with three vises | 7. Engine Rack 8' x 5' 6" with movable cross bars, gas exhaust 13. openings in floor | 12. Overhead I-Beam Carrying Truck |
| 2. Lathe 8' x 28" | 8. Car Space | 13. Wall Sockets for Electric Connections |
| 3. Power Drill 22" x 35" | 9. Air Compressor 36" x 18" | 14. Drain 9" x 9" |
| 4. Grinder and Polisher 18" x 12" | 10. Portable Pumps 52" long | 15. Teacher's Desk 42" x 28" |
| 5. Forcing Press 36" x 36" | 11. Two One-Ton Spur-Geared Blocks | 16. Lavatory 1' 9" x 1' 6" |
| 6. Engine Rack 12' x 5' 6" with movable cross bars | | |

Speaking of the junior high school of Montclair, Mr. Campbell says: "In Montclair it is not intended that the industrial-arts courses in the junior high schools shall be interpreted as vocational or prevocational subjects guiding the pupils into the industries. The aim is the immediate motivation that lies in the finished product. In the shops there is no manual training of the old order. Boys make furniture in the form of desks that can be used, of step ladders that can be sold. Interesting here is the point insisted upon in the case of all articles sold. If step ladders can be purchased for an amount smaller than the actual cost in the shops, they are dropped from the course of study. In figuring the expense of a project, the time of the boy, the time of the shop instructor, and the cost of materials are estimated."

"Montclair, for instance, is not advocating vocational subjects for the junior high school. They feel that the experience, even in diversified shop activities, is not sufficient to be termed try-out units. The sole aim for offering varied types of shop work is to enable the boys to work in various materials which call for a variety of tools and a diversity of operations."

"Probably at no place has the play instinct been so strongly encouraged in boys as in Mont-

clair. Great value is estimated in affording an opportunity to make high class toys. In their school shops are to be seen many water motors which will actually drive light machinery; beautiful miniature yachts made to compete in the yacht races given each spring. There are to be seen motor-boats, steam engines, telegraph sets, bells wired, and ingenious inventions which boys



JEFFERSON JUNIOR HIGH SCHOOL, MINNEAPOLIS.

Fig. 14. Complete Shop Fully Equipped for all kinds of Wood Work. Bleacher Seats for Recitation Purposes. Total Floor Area 2,541 Square Feet.

EQUIPMENT SCHEDULE.

- | | | |
|------------------------------------|------------------------------|---|
| 1. Manual Training Bench 42" x 22" | 8. Grinder 2' 6" x 2' 2" | 15. Saw Bench 3' 2" x 4' |
| 2. Lumber Rack 13' 0" x 6' | 9. Teacher's Desk 42" x 24" | 16. Jointer 8' 2" x 1' 4" |
| 3. Single Planer 4' 6" x 3' 3" | 10. Lavatories 1' 9" x 1' 6" | 17. General Tool Cabinet 5' x 7" |
| 4. Mortiser 5' x 3' | 11. Towel Cabinet 1' 8" x 4" | 18. Tool Cabinet 3' x 1' 9" |
| 5. Wood Turning Lathe 3' 6" x 2' | 12. Wardrobe 2' x 1' 3" | 19. Students Locker Cabinet 3' 6" x 2' |
| 6. Band Saw 4' 11" x 2' 10" | 13. Bookcase 4' x 1' 3" | 20. Finishing Bench 15' 6" x 2' 2" |
| 7. Bleacher Seats 12' x 6' 3" | 14. Exhibit Board 10' | 21. Steel Supply Cabinet 2' 10" x 1' 6" |

have contrived in order to make their toy boats a bit unusual. In going through this room a visitor exclaimed, 'It is a child's paradise.'

The Unit Shop

As the enrollment increases, the small general shop gradually gives way to the unit shop, in which facilities for work and character of instruction can be made to appeal more strongly to the interests of the growing boy. The provision for such shops will depend upon the kind of instruction that is likely to prove the most timely and valuable to the community as a whole. No general suggestions as to the order in which these shops ought to be made a part of the school curriculum can very well be given, but the plans of a few typical shops have been selected, as indicative of the sizes of rooms required, and the extent of the equipment needed. The fact that these are plans of shops in Minnesota has no particular significance, except that they were easier to secure. They might as well have been plans from almost any other state in the Union, as the general character of these unit shops is very much the same wherever found.

Mechanical Drawing Room

The tendency has been to make the mechanical drawing room larger than really necessary, owing to the notion that drawing tables should be arranged much after the fashion of school desks. For this reason, two illustrative floor plans of the interior arrangement of these rooms have been included. One shows four rows of drawing tables and the other three. Both rooms are the same width. One requires 28.7 square feet per pupil and the other 38.3 square feet. The difference of 9.6 square feet will give an additional sitting to every fourth pupil.

There is no particular advantage secured by giving four aisles to three rows of pupils. The number of pupils, owing to the floor space needed for the equipment would not be likely to cause any congestion, if the center aisle had twice as many pupils passing as each of the outside aisles. The instructor can reach each pupil for observation of his work just as satisfactorily and a little more rapidly in the plan showing four rows of tables than in the plan giving three. In order to avoid waste floor area, with drawing tables of the size shown, the smaller room is the more desirable.

Electrical Shop

The wiring booths have presented quite a problem in the arrangement of the equipment in the electric shop. At first it seemed logical to place them in a row equidistant from the windows and the interior partition, but this resulted in darkening the part of the room farthest from the windows to such an extent as to seriously reduce its usefulness. The booths were then moved closer to the inside partition but still placed so as to be free of access from two opposite sides. The advantage appeared questionable, however, and as more usable space

(Continued on Page 132)

Marketing School Bonds¹

John Guy Fowlkes, University of Wisconsin.

School bonds are funded securities. They are promises to pay certain sums with interest, at certain dates. Such promises are made by real municipalities known as cities, towns, or villages, or by quasi municipalities known as school districts. They are made in order that adequate funds for financing public education may be available. Any true investment implies divesting one's self of the possession and control of one's assets and granting such possession and control to another. In other words, when money is invested one party turns over a sum of money to another party in return for which the recipient gives a promise to pay. Stated in still more simple terms, an investment involves a loan. Therefore, in the light of these definitions, it is evident that school bonds are real investment securities.

There seems to be a growing demand for investment securities rather than speculative securities. More extensive and more reliable publicity has helped increase the number of legitimate dealers in investment securities and to make the path of the bucket-shop or frauder more thorny than it has ever been before. Because of these elements, it would seem that the sale of school bonds would be a simple and easy matter, it being only necessary for boards of education to establish connections with proper authorities and choose the most desirable purchaser. However, the process of negotiating a sale of school bonds is quite often extremely perplexing and difficult. One of the hardest steps in disposing of school bonds is discovering available markets for the securities and then determining the market on which they should be placed.

School bonds that have been authorized by some local community may be disposed of at present in the three following ways:

- (1) By private sale.
- (2) By irregular methods.
- (3) By public sale.

Private Sale

A private sale of school bonds means that the municipality or school district is not required to give public notice of an intended sale and thereby get competing bids. When private sale of school bonds is not specifically forbidden it is permissible, but in the majority of states, public sale is definitely required. The private sale offers only one advantage to the community over public sale, namely, that the sale may be made within a short period of time and the bonds may be disposed of when market conditions are favorable. For the purchaser, the private sale diminishes both the amount and the intensity of the competition and thereby enables the purchaser to make a lower bid than he otherwise would. A prospective purchaser may also be able to take further advantage of the community if he is in possession of advance market information. Indeed, a professional bond buyer is very likely to be much more familiar with market conditions than any of the officials in charge of the selling of school bonds. Again, in a private sale, many bond houses will not be aware of the proposed sale and cannot offer bids on desirable issues.

One type of private sale of school bonds which has caused no little comment in the last few years is that of "direct selling" to the investor or selling "over the counter." Under prosperous conditions, a community may market its own securities quite successfully, but for a general policy this practice is unsound. When financial conditions are not just right, it

is exceedingly difficult for communities to sell directly and no banking house will buy bonds which have been offered for sale by the community save at a market discount. A few years ago, Philadelphia offered \$7,000,000, four per cent bonds "over the counter." The enterprise was widely advertised as a success. But, it was not a success. Only \$1,910,000 were actually taken by the public.² The commissioners of the Sinking Fund of Philadelphia took \$1,225,000, and some twenty-five banks and trust companies subscribed large amounts. It is evident that in reality the city of Philadelphia acted as an underwriter of its own issue. All in all, the private sale is usually an unsatisfactory method of selling school bonds and the average board of education or city council will do well to eliminate it from the possible markets for issues they are offering.

Irregular Methods

The first of the irregular methods of marketing school bonds that will be noted here is:

Reservation by the State of the right to purchase bonds upon stipulated conditions.—In Kansas, all school bonds must first be offered to the State School Fund Commission, which has the option of purchasing them at not more than par. In Oregon, all school bonds must first be offered to the State Land Board, which has the right to purchase them at not more than their par value, at a rate of interest not less than 5 per cent per annum. In Texas, the State Board of Education has an option of 10 days in which to purchase school bonds at the price offered for such bonds by the best bona fide bidder.³

A plan whereby a state purchases the school bonds of local communities is particularly beneficial to the smaller communities. It is a well known fact that there is a positive relationship between population and the credit of a community, and for this reason the smaller communities of a state are usually forced to float school bonds at a higher rate of interest than the larger communities have to pay.

For example, as is shown by Tables I and II in the state of New York from 1916-21 both the gross and net rates of interest paid on school bonds by the smaller communities were decidedly higher than those interest rates paid by the larger communities. Inasmuch as the bonds of the smaller communities are as secure so far as payment of principal is concerned as are the bonds of the larger communities, this seems an injustice. To correct this maladjustment and also to lessen the possibility of fraud, a bill was proposed in New York in 1922 which provided for the purchase at a price not below or above par at a uniform rate of interest (if funds be available in the state treasury) of all municipal bonds issued in the State of New York, including bonds of school and other special districts. This bill was not passed, but such a provision seems to have much merit in favor of the smaller communities and if the rate of interest were properly adjusted it would work no hardship on the larger communities.

TABLE I. Median Gross Rate of Interest Paid on School Bonds in New York State 1916-21.⁴

Community	1916	1917	1918	1919	1920	1921
All Cities ⁵	.....	.....	.....	.....	.....	.....
Over 175,000	4.385	4.125	4.625	4.625	000	4.625
All Cities Over 50,000	.....	.....	.....	.....	.....	.....
But Less Than 175,000	4.375	4.58	5.06	4.55	5.10	5.61
All Cities Less than 50,000	4.625	4.625	5.08	4.81	5.125	5.375
All Villages and Rural Districts	4.75	5.00	5.15	5.00	5.87	6.00
New York ⁶	4.64	4.75	5.10	5.01	5.54	5.68
State Total	.....	.....	.....	.....	.....	.....

⁴Dewey, Arthur Stone—"The Financial Policy of Corporations." Vol. II, p. 147.

⁵United States Bureau of Education, Bulletin No. 22, 1915, State Versus Local Control of Elementary Education (Finance) by Theodore L. MacDowell, District Superintendent of Public Schools, Philadelphia.

TABLE II. Median Net Rate of Interest Paid on School Bonds in New York State 1916-21. ¹						
Community	1916	1917	1918	1919	1920	1921
All Cities ²	.....	.....	.....	.....	.....	.....
Over 175,000	3.99	3.87	4.0	4.5	Issues	4.25
All Cities Over 50,000	.....	.....	.....	.....	.....	.....
But Less Than 175,000	3.967	4.21	4.58	4.5	4.98	5.12
All Cities Less Than 50,000	4.00	4.33	4.75	4.57	4.90	5.08
All Villages and Rural Districts	4.17	4.71	4.95	4.72	5.40	5.57
New York ³	4.14	4.44	4.81	4.50	5.16	5.33
State Total	.....	.....	.....	.....	.....	.....

One of the most interesting of the irregular plans for marketing school bonds that have been developed is that system perfected in New Jersey which Fraser Brown in that very good work, entitled, "Municipal Bonds," discusses as follows:

The New Jersey Plan.—New Jersey has evolved a plan peculiarly its own. It has been observed by students of municipal finance that municipalities have not always applied the premium, the price above par (generally one hundred) bid for the bonds, to the purpose for which the bonds are issued. Instances of gross abuse have been common. Some years ago, a New York city, desiring to obtain money for current expenses, refunded a large amount of its debt and deliberately made the interest rate much higher than market conditions required. A large premium resulted, and instead of being applied to the purpose for which the bonds were issued or placed in the sinking fund, this premium found its way into the municipal till and was used for current expenses. To prevent this sort of thing, the New Jersey statute now provides that the notice of sale must state the amount of money necessary to be raised. The bidder is required to state the number of bonds he will take, bidding therefor the amount of money necessary to be raised and an additional sum of less than one thousand dollars. Suppose, for instance, that one hundred bonds of one thousand dollars each are offered for sale and the amount of money required to be raised is one hundred thousand dollars. A bidder may offer to pay one hundred thousand nine hundred dollars and to take therefor ninety-nine bonds. This plan has worked advantageously in practice and has resulted in abolishing premiums of more than nominal amounts.

One other special method of floating school bonds which should be discussed here is that employed in North Carolina. Here the local communities issue bonds equal to the desired amount of money, turn them over to the State and the State in turn issues State bonds, and returns the needed funds to the local communities. While this procedure may at first make it possible for the local issuing bodies to obtain funds at a lower rate of interest than would otherwise be possible, (since state bonds can be sold at a lower rate of interest than the securities of smaller corporate powers) according to the opinion of expert bond merchants as well as that of some of the best lawyers it will not be long till the credit of a state indulging in such a practice will be jeopardized and the rate of interest on all bonds issued by that state will of necessity be higher than before.

Public Sale

A public sale, as the name implies, is a sale of which public notice, by advertising, is required. A public sale is advantageous to the community issuing bonds because it motivates bidding and thereby increases the competition. The fact that there is a goodly number of prospective purchasers tends to shed more light on the issue than there would be otherwise and thus more protection is afforded all concerned. A public sale, usually invites the bids of bond and banking houses from all parts of the country and thereby increases decidedly the scope of the possible market of the issue on sale. To be sure, in a public sale, it is possible to lose a very advantageous market since it is necessary to wait at least a week and usually longer between the date when the issue is publically offered, bids are received and the successful bidder is determined. As has previously been stated,

¹Compiled from "Municipal Bond Sales," 1916-21, New York City.

²New York City is not included.

¹An address delivered to the National Association of Public School Business Officials, at their annual meeting in St. Louis, May 17, 1923.

most states require a public sale of all municipal bonds. In the light of practice and expert opinion, it seems certain that the public sale is the best method for the average board of education or city council to employ in marketing school bonds. After the market has been selected it is imperative that the authorities strictly adhere to the details of sale, so certain dangers in and criteria for issuing school bonds will now be discussed.

Observance of all Legal Requirements Essential

The most essential requisite for the success of a school bond issue is that all legal restrictions or provisions be strictly observed. It would be neither feasible or possible to discuss all the causes of illegality here. In the last analysis they concern only the issuing community, the bond attorneys and the courts. However, Chamberlain states that the factors which most prevalently cause general municipal bonds to be declared illegal are legal provisions which have to do with

- (1) The authority of issue;
- (2) The purpose of issue;
- (3) The process of issue;
- (4) The violation of debt and tax restrictions;

and this classification may well be applied to school bonds. Failure to comply with any element of existing legislation makes an issue illegal and, consequently, boards of education and superintendents of schools should exercise great care in observing existing statutory provisions.

(1) Authority of Issue

The real, ultimate authority to incur bonded indebtedness for school purposes rests with the constituency and forty-one states have definite statutory provisions which designate the persons who are responsible for authorizing the borrowing of money and the issuing of bonds. These provisions are quite varied in nature and are as follows:

"In 28 states such responsibility is vested solely in legal voters; in 8 states, in legal voters who are taxpayers; in 3 states, either in legal voters or in school trustees, according to the purpose for which or the district in which bonds are to be issued; in one state, in school trustees alone; in one state, either in the township trustee upon authorization of the township advisory board, or in school trustees, according to the kind of school unit concerned.

"Although legal voters most frequently have the actual power as to the issuing of bonds, yet in a number of States where this is so, local school authorities are intrusted with certain minor powers, such as preparing an estimate of the probable amount of money needed, as in Colorado, Michigan, Nevada, and Ohio. In Arkansas, for erecting and equipping school buildings in special school districts, boards of directors prescribe conditions and regulations as to amount, time and manner of payment of bonds. In Michigan, before bonds may be issued, the school board must pass upon the legality of the proceedings in voting the bonds. In Iowa the school board may not attempt to defeat the wish of the voters clearly expressed, yet a vote to issue bonds is regarded somewhat as permissive authority. In New York (in union free-school districts for building schoolhouses) and in Missouri, local school authorities may issue bonds for a less sum than the amount authorized by vote. In New Mexico, when a school district does not own a schoolhouse, the county superintendent has power upon a petition signed by 20 residents to order the school directors to submit the question of issuing bonds for such purpose to the voters.

"In the States in which bonds are issued on vote of the electors or of the voting taxpayers a notice must be given either by the district itself or by local school authorities stating the time of election, the amount of money to be raised, the purpose or purposes for which bonds are to be issued, the rate of interest thereon, and the number of years they are to run. Although the issuing of original bonds is vested primarily in legal voters, the power of renewing, extending and replacing bonds is generally vested in school trustees. For example, when school sites are to be purchased, schoolhouses erected, furnishings repaired, etc., the people must vote up-

on the question; but if it becomes necessary to refund bonds already authorized by the people, local school authorities have the power to take such action. It should also be noted that in some of these States, although the legal voters must pass upon the original issue of permanent bonds, a school board, in addition to the power of renewing, extending, and replacing such bonds, has original power to issue temporary bonds or warrants in anticipation of its regular income from taxes."

As was pointed out in an article by the author which appeared in the April, 1923, number of the SCHOOL BOARD JOURNAL, 46 states have provisions concerning the purposes for which school bonds may be issued. While these purposes range from the erection of buildings to the payment of teachers' salaries, most of the states have recognized that school bonds should be issued only for purposes of capital outlay.

Probably more blunders are committed in "process of issue" than in all other channels of error and for that reason the major portion of the remaining discussion will be devoted to this factor which so vitally affects the marketing of school bonds. A detailed account of existing legislation concerning the "process of issue" in floating school bonds will not be presented. The statutory provisions which appear most frequently however, and which prove most troublesome to those issuing school bonds are:

1. All records pertaining to the issue including:
 - a. Minutes of Board of Education or Council.
 - b. Forms of Resolution Authorizing Issue.
 - c. Forms of Notice of Election.
 - d. Form of Ballot.
 - e. Notice of Sale.
 - f. Form.
 - g. Frequency.
 - h. Form of Bid.
2. Rate of Interest.
3. Minimum legal selling price.
4. Type of Bond.
 - a. Registered as to Principal.
 - b. Unregistered as to Principal.
 - c. Coupon.
5. Denomination of Bonds.
6. Where payable:
 - a. Interest.
 - b. Principal.
7. When payable:
 - a. Interest.
 - b. Principal.

It seems unbelievable that any community would fail to observe all legislation which affects the issuance of its bonds, but the following discussion by Chamberlain indicates that such is the case.

"Invalidity more often arises from minor errors connected with the process of issue. Advertisement may have been omitted, or may have been insufficient. Flotations of Philadelphia, New York, and Plainfield, New Jersey, have been declined lately on the score of insufficient advertisement; of Peru, Indiana, and Reading, Ohio, because of errors in the details. It seems hardly possible that a municipality could mistake a law so apparently simple and general as that requiring the price to be at par or above; but Matrona County, Wyoming, sold an issue of 4s at par without including accrued interest, and a resale some months later was required for validation. Oneonta, New York, committed an equally incomprehensible blunder four years ago in selling an issue bearing an interest rate in excess of what was legal. The bonds were issued at 4½s, but the village was not allowed to sell anything higher than 4s; and the bonds had to be remade and sold as 4s. A school district of North Hempstead, Long Island, recently had a large issue refused because the resolution failed to state the rate of interest, or the maturity of the bonds. An excellent illustration of the nice regard for detail necessary in the process of municipal bond issue, comes from Boston. A few years ago the Council of that city voted certain appropriations to be met by a bond issue. A rumor was circulated to the effect that one member of the Council had left the meeting be-

fore the vote was taken. A denial was immediately forthcoming. But since the vote had been close the mayor called for a repassage of the ordinance, in order not to prejudice the bidding for that issue."

When such incidents as these are possible, caution cannot be over recommended.

The last phase of legislation which Chamberlain declares is the most commonly ignored or misinterpreted is that pertaining to existing debt limits on a community and will be discussed a bit later.

It seems to me that the factor which, next to legal provisions is most potent in the sureness or failure of selling a school bond issue is the publicity given to it. Whether the state statutes require it or not, all bond issues should have wide and sound publicity. Many States have recognized the importance of sound publicity by making special provisions concerning the advertising of school bonds. The New York statute governing the sale of school bonds is as follows:

"All bonds hereafter issued by any municipal corporation or by any school district or civil division of the State, shall be sold, in the case of a city of the first class as required by its charter or by any special act under which such bonds are issued, in the case of a city of the second class as required by section sixty-one of the second class cities law, and in all other cases at public sale not less than five or more than thirty days after a notice of such sale, stating the amount, date, maturity and rate of interest, has been published at least once in the official paper or papers, if any, of any such municipality, provided that if there is no newspaper published in the county in which such bonds are to be issued, or a copy thereof shall be sent to and published in a financial newspaper published and circulating in New York City."

However, it is quite possible and indeed in many instances, probable that authorities in charge of marketing school bonds substantiate the principles that have just been propounded, but do not know the kind of advertisement to run in a paper nor do they know the names of proper financial papers. To be sure by a process of trial and error it is usually possible to discover the proper publications but the following list of financial publications with the comments of Fraser Brown as given in "Municipal Bonds" would serve as a reliable guide to channels of publicity it is believed, to all those contemplating the sale of school bonds.

The Bond Buyer (New York, N. Y.)—This publication (issued daily and weekly) is the technical organ of the municipal bond business, being devoted exclusively to this one class of securities. It is the paper usually selected by municipalities in which to publish bond sale notices, bond calls, etc. Municipal bond dealers, banks operating bond department and important investors in municipal issues depend mainly upon the Bond Buyer for information relating to new State, city or other municipal bond issues. Circulation is national.

The Commercial and Financial Chronicle (New York, N. Y.)—The Chronicle is the standard weekly financial journal of the United States and is found in the offices of bankers, brokers and financial institutions, and is quite widely read by investors. It has a "State and City Department" in which is published news of current municipal finance. Circulation is national.

The Wall Street Journal (New York, N. Y.)—This is the leading financial daily, and enjoys a wide circulation among bankers, brokers, investors, etc. Banking and corporation news and the stock, bond and money markets are carefully covered. Circulation is national.

Boston News Bureau (Boston, Mass.)—In New England, the Boston News Bureau virtually duplicates the Wall Street Journal. These two publications are closely allied.

The Manufacturers Record (Baltimore, Md.)—This paper is the leading trade journal of the South. Departments are devoted to construction and financial news, in which considerable attention is given to public improvement work and public finance. Carries a considerable number of official notices of Southern municipal bond offerings. Circulation is national.

*Lawrence Chamberlain—"The Principles of Bond Investment."

*Conn. Laws. Chap. 24, Sec. 9.
(Continued on Page 136)

*Theodore L. MacDowell—"State Versus Local Control of Elementary Education."



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EDITORIAL

THE SCHOOLMASTER IN AMERICAN PARTY POLITICS

While the American schoolmaster is the best trainer for that political proficiency, which is a prerequisite to stability in government, he is by no means a figure on the political horizon. In fact, his effacement is commonly accepted. While he instructs both the actors and the audience in the political drama, he is by no means the stage manager. And in the nature of things he cannot be such without relinquishing his office as general trainer for citizenship. He teaches his art and leaves the manner of expression to his pupils.

The year just begun, being the country's big political year, during which a president of the republic, members of the national congress, governors, and all sorts of public servants are to be chosen, will unquestionably bring into the limelight here and there the attitude which the thousands of trainers in political science and government assume. The college professor on astronomy may contribute his views on the tariff, the Greek scholar tell what he knows about the currency question and the geologist discusses the nation's foreign policy, but the schoolmaster identified with the common schools of the nation is not so privileged.

He confines his political activities to a single vote, intelligently formulated and conscientiously cast. He initiates his students into the principles of government and then lets them choose their own party faith and the men who shall govern. Although he may be an intense partisan at heart his voice is not raised publicly in behalf of party policy or practice.

That a school superintendent, principal or or teacher, cannot enter actively into a political fray and thus throw the weight of his political prestige as trainers of the youth into the scales of partisan fortune is established. A voting constituency is bound to find its division on governmental policies and the choice of candidates for office. To become conspicuously identified with one or the other side of partisan divisions, means to invite commendation on the one hand and condemnation on the other. The schoolmaster seeks neither.

A political campaign is a contest between men for the recognition of certain ideals and policies, and at the same time a peaceful warfare for the emoluments of office. Under our form of government these contests are essential in order that principles and policies may properly come under the scrutiny of a determining constituency. Party machinery becomes the vehicle through which men and measures are presented for examination and selection.

The school superintendent, who is the educational leader of his community, has long recognized the fact that his function as such does not permit activity in the field of practical politics. Nor can his associates, principals and teachers, consistently and with propriety engage in the political contentions of locality, state or nation. In their non-partisan capacity as in-

structors and trainers for the duties of citizenship, they wield a more vital and beneficent influence than they possibly could wield in a partisan capacity. In the scheme of things they prepare the specifications for the political foundation as well as the superstructure in order that the whole may be imposing and enduring. Thus, the American schoolmaster, in his sphere as such, and without entering the political arena, performs a primary and indispensable function in the political life of the nation.

ATTRACTIVE SCHOOLHOUSES AND COMMUNITY PRIDE AND PATRIOTISM

The spirit of community progress fostered by the many civic and commercial bodies found throughout the United States usually seeks its expression in tangible things. The citizen who is actuated by a touch of local patriotism points with pride to the handsome business blocks and spacious factory plants, to well paved streets and parks.

If he has an appreciation for the finer impulses and ambitions of the community he will point out the hospitals and churches, and the schools if there are any attractive schools to be pointed out.

The citizen who is proud of the economic studies his town is making, and does not forget the charitable tendencies of the people, cannot well overlook the intellectual aspirations as exemplified in dignified and well-equipped schoolhousing. Material success, after all, must find its ultimate expression in something besides fine business and industrial structures. These are the means to an end, and the end is an intelligent, orderly and contented citizenship.

Thus, the unit of population, be it large or small, city or village, that makes claim to being a worthy integral part of a great nation, must demonstrate a recognition of the agencies that train for citizenship. These agencies are expressed in a series of good school buildings, and no unit of population without them can make any pretense to being progressive.

Nor are any of the public buildings found in the average community, such as city hall, courthouse or library, more capable of impressive architectural design than a schoolhouse, more particularly a high school building. And none could express the intellectual aspirations of the people more fittingly than the community's leading institution of learning.

Whatever may be said of economy in public expenditure, it follows nevertheless that in constructing school buildings some regard for exterior design should be observed. This does not signify that any extravagance should be engaged in, but neither does it mean that such a structure must be reduced to the plainness of a factory building.

The average citizen is agreed that public buildings should be dignified in outline and form. They should prompt respect for government and authority. A schoolhouse should not only present grace and dignity as far as exterior outline is concerned, but should bear the touch of art as well. On the whole, it should be an inviting structure that pleases the eye and at the same time dignifies the cause of education and citizenship.

THE SCHOOL BOARD PRESIDENT AND THE SUPERINTENDENT OF SCHOOLS

The two outstanding figures of a school system are the president of the board of education and the superintendent of schools. These officials stand in a most important relation to each other and to the successful operation of the schools. The one represents the public, the other the professional workers.

There is no doubt that modern thought in school administration has fixed to a reasonable degree the scope and function of the two. The

president heads the body that formulates policies on school government, and the superintendent constitutes the strong right arm that carries them into execution. The relationships are reasonably established.

But, there is something more—in fact, much more—besides the duties and prerogatives which natured thought and fixed custom has assigned to them. The human element is still to be reckoned with. The written law may be one thing, and the unwritten law growing out of human contact in daily life, quite another thing.

The natural disposition and peculiarities of a president may prompt an attitude towards the superintendent found in no administrative code. On the other hand the superintendent may clothe himself with prerogatives or divest himself of them, out of proportion to recognized standards. All this may be a matter of temper and temperament.

Certain functions and relations, however, are quite clear and well established. There are no master and servant relations between president and superintendent. Nor is the one an employer and the other an employee. The one may have a voice in the employment of the other, but that voice is effective only in conjunction with other voices. The school board member in his individual capacity, and that includes the president, has no particular power. It is in his collective capacity, in meeting legally assembled, that he exerts power and authority.

At best, both the president and superintendent serve the same employer, namely, the public. They are coordinate officers, each serving in the capacity assigned to him by law. The president in his individual capacity wields no authority over the superintendent any more than the superintendent wields authority over the president. They are a team in the same harness pulling in the same direction.

But, as already intimated the human element is ever present. An aggressive president may invade the prerogatives of a shrinking superintendent. A courageous superintendent may have to crowd an ultra-conservative president. The human adjustments must assert themselves where printed formulae fail.

The president, or member, who nags the superintendent is a pest. The superintendent who bores the president or member with trifles, or constantly seeks to exalt the importance of his job, is a nuisance. Both species of school officials are an impediment to the smooth and efficient administration of the school system. Friendly and helpful criticism is always in order, and well balanced men and women will always invite or advance such criticism with a cordial spirit. A cheerful word goes farther towards desirable team work than a grouch or a grunt.

In order to serve the real objective for which both president and superintendent are chosen—the physical, mental and moral welfare of the child—there must be mutual frankness and courteous cooperation between the two functionaries.

No president of a board of education can exert his best unless the superintendent is open and frank with him and invites his counsel on all matters of policy. No superintendent can be at his best if he has an unsympathetic and critical president to deal with. The superintendent must be able to feel that in the president he has a loyal supporter who will uphold him in every laudable departure and in the authority which goes with his office.

The trust conferred upon the two officials by law is a sacred one, and the successful administration of the school system rests largely upon a proper recognition of the function of each and upon an observance of the relation that is conducive to desired results. Let the human ele-

ment find expression in a cheerful approach to duty, mutual respect for associates, and an enthusiastic concern for the cause in hand.

CIVIL SERVICE, SCHOOL ADMINISTRATION AND TEACHER CONTROL

The voting constituency of Bridgeport, Connecticut, was called upon at the autumn election to record its approval or disapproval of a charter revision which placed the appointment of the board of education in the hands of the mayor and the certification of teachers under the control of the local civil service commission.

When the school people of Bridgeport sought light on the subject at the hands of a national organization devoted to civic progress they were calmly informed, that the teachers should be subjected to the civil service principle just as are other employes of the local government. That, on its face, sounded reasonable, and the alleged expert giver of advice undoubtedly believed that he had rendered an uninformed community a great service. Incidentally he added that an *exparte* licensing body would bring political pull and favoritism into play.

Fortunately, the voting constituency learned something about the fundamentals in school administration and as a result voted down the charter revision by a vote of four to one. Other objectionable features may have characterized the proposed charter, but the two objections urged by the school public were sufficient to warrant its defeat.

To begin with, the appointive system as applied to the school board is not objectionable but for a city of the size of Bridgeport the elective system is preferable. In the large cities, such as New York, Chicago and Philadelphia the appointive system proves more expedient because the general voting public has not the opportunity to secure a close view of the candidates. In the smaller cities the opportunity to scrutinize aspirants for school board honors is much better. Besides, the elective method is more democratic.

The more interesting feature of the Bridgeport problem relates, however, to the attempt to make the school system a branch of the municipal government by bringing the professional workers under the local civil service system. No doubt, an official body that determines upon the fitness of police and firemen, sewer and street inspectors, clerks and accountants, may find it possible to determine upon the fitness of a teaching body to serve the schools.

But, it so happens, in first place, that a school system is a state institution and not a branch of the local government, and, in the second, that the agencies which determine the fitness of teachers are well established and that these, too, are a part of a state system of education. It therefore becomes illogical to hold that a municipality can control the employment of teachers as it does other city employes.

Those who sit in expert judgment on the science of government, and the relations which control the several units, should go a little deeper into the subject and become clear as to the status of a school system. They will soon discover that the basic laws of the several states define this status in unmistakable language.

But, if this were not so it is extremely doubtful whether any local civil service commission could render a better service than that now afforded in the certification of teachers by agencies created for that purpose. To hold that such agencies are subject to political control is an unwarranted reflection upon those in charge of them. To create the inference, by casting such reflection, that the local civil service body is free from political influence, does not serve to make out a good case.

In the evolution of school administration, as exemplified within the last quarter of a century,

it has become clear that a school system, in order to be freed from local political contention, must be separated from the local city administration. While the community must pay for the school, it does not follow that these must be amenable to city hall dictation. They are subject to state authority and must perform their function within the instructions and limitations of that authority.

THE TRANSITION FROM OLD TO NEW BOARDS OF EDUCATION

The board of education that goes out of office is usually desirous of clearing the decks for the new incumbents of office. The whole board may not retire as the result of an election or the appointment of members, but even a partial retirement of members may mean the complete reorganization of the succeeding body. Thus, the old organization is desirous of completing its business before the new gets into office.

These transition activities are not, however, always marked with the proprieties that must necessarily obtain. Vexatious disputes have arisen where boards have relegated to the succeeding bodies business which should have been finished up before going out of office. On the other hand, outgoing boards have usurped the prerogatives of incoming boards.

There can be no definite rule as to where the transactions of the one shall end and the other begin, or rather to what extent the one shall legislate for the future and to what extent the other shall accept unfinished business. Here the ordinary routine of school board deliberations cannot come into question, but rather those involving policies and departures which become binding upon the new body.

The Akron, Ohio, board of education had under advisement a large construction plan. It

was believed that final action should be deferred until the new board, shortly to come into office, should give it consideration. The Akron Journal, in commenting upon this action, observes:

"In taking this action the present board will commend itself to the favor of all the citizens of Akron. It has never been a credit to popular government that retiring public officials, whether members of congress, or state or city administrations should use the concluding weeks of their terms in public service to railroad through a lot of business that should be left to their successors. Yet this has been the rule. Its being so is the thing that has fostered a demand from the people for a reduction of the time intervening between the election of new officials and the beginning of their terms. The retiring school board in Akron has set a good example for every American community."

Boards of education have been guilty, on the eve of retirement, to tie the hands of their successors on building projects, salary adjustments, textbook adoptions and teacher appointments. Such procedure is not always accepted by the new administration as being either courteous or fair. Nor can such procedure be defended unless it can be demonstrated that the new body is so inexperienced and incompetent as to render it expedient for the old to act before going out of office.

As already intimated, no definite rule can apply as to the relations which should guide a retiring and an incoming administration in the transition period. The member who retires without chagrin is not inclined to be revengeful, and the recruit who is not over-zealous will be thankful for an agreeable beginning.

Suffice it to say that common courtesy and decency must govern the passing out of the old and the entrance of the new.

What About the School Sitting Shortage?

The Facts as Applied to the Several Sections of the United States.

The shortage of school sittings, which is quite acute in many of the larger cities, has led to some bitter criticisms of school authorities. It has also prompted magazine writers to indulge in somewhat extreme versions of the existing shortage and with a touch of alarm as to a prospective solution of the problem.

With the thought in mind that the real facts only can serve best in estimating the country's shortage of schoolhousing, the research department of the AMERICAN SCHOOL BOARD JOURNAL made a careful survey of the entire country and assembled the information for careful analysis.

While there was an unprecedented volume of schoolhouse construction during the past few years, the fall opening of the schools for 1923 demonstrated that there was still a pronounced lack of adequate school sitting facilities.

This shortage of schoolhousing is mainly located in the cities of 100,000 and over, of which there are 68 in the United States. These cities embrace 25% of the total school population, and approximately 80% of the total school sitting shortage exists in these communities. In like manner, at the opening of the school term in September, hundreds of smaller cities faced a school sitting shortage. With few exceptions, however, the conditions in these cities are not acute and are fast being taken care of with new school construction.

In the cities with a population of 100,000 and over the school sitting shortages range all the way from a thousand to one hundred thousand sittings as in the case of the city of New York. However, there are a number of cities in this group where the shortage is not acute and is

being taken care of with temporary portable buildings pending the completion of new schools now under construction. There are several cities where no real shortage exists, notably in the city of San Francisco with 60,281 sittings available and 58,500 pupils.

The conditions relating to the school sitting shortage vary in the different sections of the country. In the New England states the situation is not unsatisfactory. The state of Massachusetts reached the peak in 1921 when the shortage represented approximately 7% of the total of the public school population. New school construction since then provided new buildings with capacities for 35,000 pupils and building programs are under way to take care of the present shortage.

New York state has a shortage of school accommodations in practically all the larger cities. New York City has been endeavoring to meet the school shortage situation for the past several years but approximately 200,000 pupils are now on part time.

In Pennsylvania, New Jersey, Ohio, Maryland, and Indiana, there is no acute shortage except in the larger cities. The school sitting shortage in the southern states continues, except in Florida. The situation is acute in the larger cities, particularly Birmingham, Ala.

In Illinois there is a pronounced shortage all over the state. In Minnesota, Nebraska, Wisconsin, and Iowa, there is no real lack of school accommodations. In the western states there is no general shortage of school housing except in the larger cities. In the cities of Portland, Seattle, and Los Angeles, school facilities are not equal to the needs.

(Continued on Page 88)

Securing School Architectural Service

The Competitive Plan System, or the Direct Employment of Architects—Which?

William George Bruce.

When the community need for more schoolhousing is seriously contemplated, the question of securing architect service becomes of the uppermost concern. The average school administrative body, and more particularly those that engage in building projects semi-occasionally only, is not always clear as to the best method to be employed in securing architectural service. Hence, it may prove timely to ascertain how boards of education proceed towards obtaining desired results, and what has been evolved through experience and experiment, in the direction of definite method and policy.

The plan commonly pursued for many years, whereby the board of education sits in judgment over a set of competitive plans and listens to the speeches of architects who have presented them, has in large part given way to the newer plan whereby a known schoolhouse expert is employed outright to make a study of location, environment, and local needs and then proceeds to plan and build a structure. This applies, however, more largely to the cities. In the smaller units of population where new schoolhouse construction is more rare, the competitive system still prevails to a considerable extent.

Where the demand for additions to the schoolhousing is practically continuous, namely, in the larger communities, the competitive system has almost wholly given way to the so-called expert plan. The school authorities in many cities maintain a well organized building department which controls the architectural, engineering, and supervising service. Some cities maintain an engineering and repairing department on a permanent basis employing architectural service on new projects only and utilizing its own force to perform the supervisory labors.

With the almost general shortage of schoolhousing throughout the country many communities have resorted to the formulation of school building programs. In instances of this kind, experts of national repute have been invited to make surveys of the physical situation of the schoolhousing and provide a program whereby the needs, present and prospective, are reasonably established. Frequently, too, where no program is provided and where local architects are employed by the school authorities, some wellknown expert of national repute is engaged to serve in the capacity of consultant both in outlining a policy and in formulating general plans.

The Basis of An Inquiry

Thus, the first question that arises is: Shall the school board select a schoolhouse plan and then engage the architect who designed it? Or, shall the board select the architect first and then ask him to make the plans?

In order to arrive at some comprehensive data as to the prevailing method employed by the various communities, more especially the larger, the writer instituted an inquiry covering cities of 100,000 and over. This inquiry concerned itself with the following questions:

- 1—Do you select schoolhouse plans on a competitive basis?
- 2—Or, do you employ an architect by the year to look after all your schoolhouse planning, and construction work?
- 3—Have you in the past invited the services of a consulting architect to aid your regular architect?
- 4—How is the architect, or are the architects, who design new schools, employed?
- 5—If an employe of the board, what is his compensation?
- 6—How is the engineering service for new buildings secured?

7—Does the board employ draftsmen and construction superintendents for its new buildings?

8—What is the cost of your architectural service for new school buildings, figured on the percentage basis?

Competitive versus Employment Basis

The school authorities in the following cities invite competitive schoolhouse plans and make the merits and desirability of such plans the basis for selection:

Allentown, Pa.	Fort Wayne, Ind.
Altoona, Pa.	Harrisburg, Pa.
Atlanta, Ga.	Hartford, Conn.
Augusta, Ga.	Houston, Texas.
Binghampton, N. Y.	Huntington, W. Va.
Birmingham, Ala.	Lancaster, Pa.
Brockton, Mass.	Lawrence, Mass.
Camden, N. J.	Lynn, Mass.
Canton, Ohio.	Memphis, Tenn.
Charleston, S. C.	Nashville, Tenn.
Chattanooga, Tenn.	New Britain, Conn.
Chester, Pa.	Norfolk, Va.
Covington, Ky.	Racine, Wis.
East St. Louis, Ill.	Richmond, Va.
El Paso, Texas.	Savannah, Ga.
Evansville, Ind.	Youngstown, Ohio.
32 in all.	

The following cities either (1) maintain a regular schoolhouse planning and construction department, or (2) employ an architect by the year on a salary basis, or (3) employ an architect from job to job:

Akron, O.	Norfolk, Va.
Atlantic City, N. J.	Oakland, Calif.
Bayonne, N. J.	Oklahoma City, Okla.
Boston, Mass.	Omaha, Nebr.
Brockton, Mass.	Passaic, N. J.
Buffalo, N. Y.	Paterson, N. J.
Cambridge, Mass.	Peoria, Ill.
Cincinnati, O.	Philadelphia, Pa.
Chicago, Ill.	Pittsburgh, Pa.
Cleveland, O.	Portland, Me.
Columbus, O.	Portland, Ore.
Denver, Colo.	Providence, R. I.
Detroit, Mich.	Reading, Pa.
Duluth, Minn.	Rochester, N. Y.
East Orange, N. J.	Rockford, Ill.
El Paso, Texas.	Saginaw, Mich.
Erie, Pa.	St. Louis, Mo.
Fall River, Mass.	St. Paul, Minn.
Flint, Mich.	Salt Lake City, Utah.
Gary, Ind.	Sacramento, Calif.
Grand Rapids, Mich.	San Antonio, Texas.
Hoboken, N. J.	San Diego, Calif.
Holyoke, Mass.	San Francisco, Calif.
Indianapolis, Ind.	Seattle, Wash.
Jacksonville, Fla.	Sioux City, Ia.
Jersey City, N. J.	Somerville, Mass.
Johnstown, Pa.	South Bend, Ind.
Kansas City, Kans.	Springfield, O.
Kansas City, Mo.	Springfield, Ill.
Lansing, Mich.	Syracuse, N. Y.
Lincoln, Nebr.	Tacoma, Wash.
Louisville, Ky.	Terre Haute, Ind.
Long Beach, Calif.	Toledo, O.
Los Angeles, Calif.	Trenton, N. J.
Manchester, N. H.	Troy, N. Y.
Milwaukee, Wis.	Washington, D. C.
Minneapolis, Minn.	Waterbury, Conn.
Mobile, Ala.	Wichita, Kans.
New Haven, Conn.	Wilkesbarre, Pa.
Newark, N. J.	Worcester, Mass.
New Orleans, La.	Utica, N. Y.
New York City.	Yonkers, N. Y.
Niagara Falls, N. Y.	
85 in all.	

The following cities have in the past engaged the services of a consulting architect to aid the regular architect: Altoona, Pa., Atlanta, Ga., Binghampton, N. Y., Birmingham, Ala., Buffalo, N. Y., Charleston, S. C., Denver, Colo., Hartford, Conn., Jacksonville, Fla., Johnstown, Pa., Lawrence, Mass., Manchester, N. H., Norfolk, Va., Sacramento, Calif., Savannah, Ga., Terre Haute, Ind., Trenton, N. J. As applied to the country at large, including small as well as large cities the list of cities that have invited outside expert service is quite large.

In Cambridge, Mass., the architect and engineer are chosen by the mayor and the school

committee. No definite plan obtains. In Chattanooga, Tenn., the mayor and board of commissioners select the architect or architects from the locality. Hoboken, N. J., maintains the same practice. At Somerville, Mass., the architect is chosen by the mayor. At Hartford, Conn., the procedure of securing architects has varied. Davenport, Iowa, Duluth, Minn., and Hartford, Conn., have used both methods, the competitive selection of schoolhouse plans and the employment of architects on a job basis.

Regular Employment and Percentage Compensation

The cost of architectural service in the several cities that have reported is as follows:

Allentown, Pa. Cost 2½ per cent for plans and specification; 2½ percent for supervision.

Akron, Ohio. Chief architect employed on yearly basis, assistants from month to month, experts on hourly or job basis. Estimated cost 3 per cent.

Altoona, Pa. Cost 5 per cent.

Atlantic City, N. J. The board selects architects rather than plans, and entrusts them with the complete job. Cost 6 per cent.

Augusta, Georgia. The architect is selected on a competitive basis who must provide the entire service. The compensation is fixed at 6 per cent of construction cost.

Bayonne, N. J. The board has a contract for three years at \$11,200 per year. Out of this sum the architect pays his own assistants. Estimated cost 8 per cent.

Binghampton, N. Y. Cost 5 per cent.

Birmingham, Ala. Cost 5 per cent; 4 per cent to local architect; 1 per cent to consulting architect.

Boston, Mass. A school building department is maintained having its own engineering force who design the heating and ventilating systems for all school buildings. An architect is chosen for each new building. The department employs construction superintendents, known as clerks of works, one for each new building. The total cost is slightly less than 6 per cent.

Brockton, Mass. All building projects in hands of public property authorities. Architects' costs not estimated.

Buffalo, N. Y. The board enters into a contract with the associated Buffalo architects. Fees vary considerably.

Cambridge, Mass. Cost 5 per cent. Engineer appointed by Camden board, N. J. Architect has full supervision.

Canton, Ohio. The board selects plans on a competitive basis usually inviting some ten architects to participate. All services are included in the cost which is about 6 per cent of contract price.

Charleston, S. C. Cost 6 per cent.

Chattanooga, Tenn. Cost preliminary studies 1 per cent; plans and specifications 2 per cent; supervision 2 per cent; total 5 per cent.

Chester, Pa. Cost 6 per cent.

Cincinnati, Ohio. Architect is employed for each project. The board employs heating engineer on two year contract. It also employs its own inspectors. Architect service about 3 per cent of cost of construction.

Cleveland, Ohio. The board of education maintains a building department and employs its architects by the year. The engineering work is also in charge of this department. The total architectural and engineering service is about 3 per cent of annual construction costs.

Columbus, Ohio. The board of education employs one architect and his assistant on salary. The architect receives (part-time) \$5,500; engineer (part-time) \$4,200; electrical engineer \$2,700; heating and ventilating engineer (part-time) \$3,000; superintendent \$3,000; draftsmen \$1,800 and \$2,400. It is estimated that architectural and engineering service runs between 4½ to 6 per cent of annual construction costs.

Covington, Ky. Plans are selected upon the competitive basis. Cost 5 per cent.

Davenport, Iowa. Method of selection varies, sometimes selecting plans and sometimes architects. The board employs its own engineer. Cost 6 per cent.

Duluth, Minn. The board of education has in the past employed various methods. Sometimes the competition was thrown open to all architects and at times confined to local architects. In 1918 the board, however, selected a firm and made a two-year contract. This

(Continued on Page 82)

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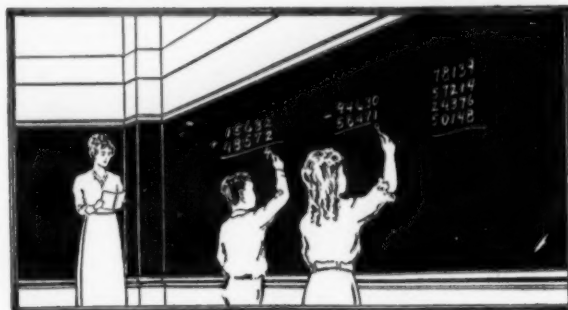
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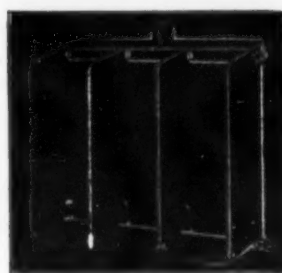
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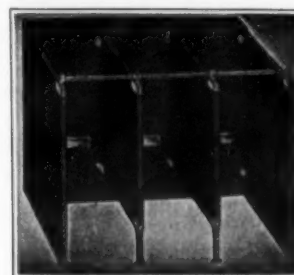
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(Continued from Page 80)

method was followed until 1922 when the board failed to agree on an architect. The board then invited five local architects to present plans for remodeling the high school, selecting one of them to complete the job.

Denver, Colo. Both the architectural and engineering service is secured by contract. A commission of 6 per cent less engineers' fees is paid.

Detroit, Mich. For many years the board of education employed a well-known local schoolhouse architectural firm by the year. Now the firm is employed for job to job. The firm is paid 5 per cent on amount of contracts. A firm of consulting engineers is also employed at 5 per cent of amount of contracts.

East Orange, N. J. An architect is retained who serves during the pleasure of the board. The architect's services include the preparation of plans and engineering service. The board employs inspector separately. Cost 5 per cent.

East St. Louis, Ill. The board has thus far kept the cost of its architectural and engineering service at 3 per cent.

El Paso, Tex. The board employs a superintendent at \$200 per month, and 1 per cent on contract. The architect receives 5 per cent for plans and supervision.

Erie, Pa. The school board employs an architect at \$4,200 per year, and a heating and ventilating engineer as assistant to architect. It also employs the draftsmen and assistants. The cost of the service is estimated at 2 per cent of total contract.

Evansville, Ind. The competitive system prevails which includes entire service. Cost 5 per cent.

Fall River, Mass. An advisory architect is employed at \$4,500. Competition plans together with supervision are paid at standard rates. Total percentage cost not established.

Flint, Mich. Architects and engineers are employed on all new building projects resulting in cost about 5 per cent of contracts.

Fort Wayne, Ind. The school board pays for plans and supervision 5 per cent.

Gary, Ind. The board chooses an architect and entrusts him with the whole job. Cost 6 per cent.

Grand Rapids, Mich. Local architects are engaged who provide engineering service. Inspectors are employed directly by board. Cost of architect and engineering 5 per cent.

Harrisburg, Pa. Owing to the competition system being in vogue the cost has varied considerably.

Hartford, Conn. The board employs an engineering representative. The method of securing architectural service has varied. The cost has been kept within 6 per cent.

Hoboken, N. J. The architect is employed on a fee basis by the board and is under the direction of the business manager. The engineering service is included in the fee. Cost 6 per cent.

Holyoke, Mass. The architect is employed by the board of public works—recommended by the school board. He is in charge of the whole job. Cost 6 per cent.

Houston, Texas. The plans are selected upon a competitive basis. Also the engineering service. Architect's fee 5 per cent, and consulting fees 2 1/2 per cent additional.

Huntington, W. Va. The plans are chosen upon a competitive basis. Architects provide entire service. Cost 2 per cent for plans, 3 per cent for supervision. Total 5 per cent.

Indianapolis, Ind. An architect is selected by the school board for each building who provides complete service. Cost 5 per cent.

Jacksonville, Florida. An architect is employed for each building program. The consulting architect receives 1 per cent, associate architect from 3 to 5 per cent, depending on amount of work involved.

Jersey City, N. Y. An architect has been in the employ of the school board since 1900. He receives \$6,500 a year or 5 per cent of contract figures. If the 5 per cent exceeds \$6,500 a year then that figure is deducted from the 5 per cent payment.

Johnstown, Pa. The engineering service and supervision is included in the architectural service. Cost about 4 per cent.

Kansas City, Kans. Architect is employed by the year. Board also employs inspector other than regular superintendent of buildings. Board pays 2 1/2 per cent on special contracts and 2 1/2 per cent on regular alterations. Total cost runs about \$50,000 a year.

Kansas City, Mo. The same architect has served for many years. He was originally on salary but for several years has been on a commission basis of 2 per cent on letting of contract and 1 per cent when building is completed. The regular employees of the school district provide the engineering service. The board furnishes all the help which the architect requires. The draftsmen in the chief engineer's office are in the employ of the board.

Lancaster, Pa. Schoolhouse plans are selected on competitive basis. Board also employs heating and ventilating engineer for each job. Cost 5 per cent.

Lansing, Mich. The school board employs an architect by the year at \$5,000. The business manager who is an engineer supplies the necessary engineering service. The percentage cost has not been established.

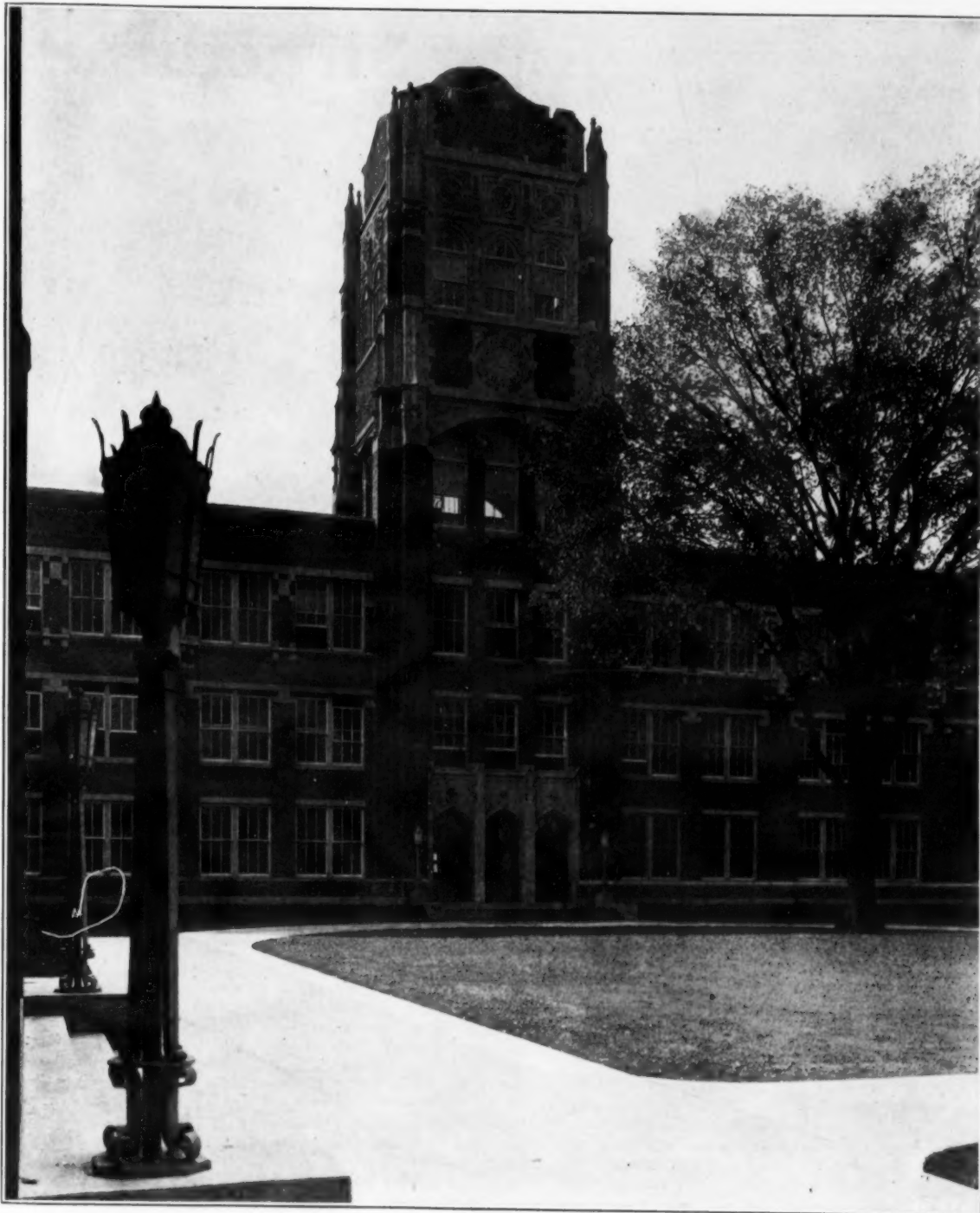
Lawrence, Mass. Plans are selected by the common council and approved by the school committee. Cost 6 per cent.

Lincoln, Nebr. For the past five or six years architects were employed for a term of years. Contract expired and no architect now employed. The salary paid architect was \$6,000 per year, plus 1 1/2 per cent on all contracts exceeding \$10,000. This service included all services except that of a building supervisor also employed by the board. Cost less than 3 per cent.

Long Beach, Calif. The architect is employed on a percentage basis, receiving 8 per cent for all-time service and 6 per cent for part-time service.

Los Angeles, Calif. The board of education employs an architectural force, including draftsmen, construction superintendents and building inspectors to look after schoolhouse planning and construction work. The board appoints architects to prepare plans and specifications for most of the larger buildings. These are usually paid at 4 per cent of the total contract price. This architectural service does not include superintendence. The heating engineering service, namely, preparing plans and specifications for heating and ventilating for new buildings is secured in a similar manner to architectural service. The fee paid is usually 3 1/2 per cent of contract price.

(Continued on Page 84)



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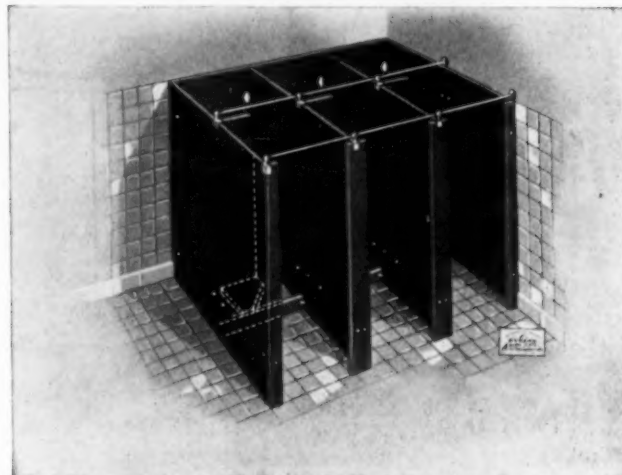
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(Continued from Page 82)

Lynn, Mass. The competitive plan system prevails. Cost 6 per cent.

Manchester, N. H. The board of education employs a different architect for each new project. The architect receives 6 per cent out of which he pays 2 per cent for supervision.

Memphis, Tenn. The competitive system prevails and architects service includes engineering and supervision. Cost 5 per cent.

Milwaukee, Wis. The school board employs an experienced schoolhouse architect by the year, also engages the engineering service and supervision. Cost 5 per cent.

Minneapolis, Minn. The school board maintains an architectural and engineering department. About forty persons, including draftsmen, engineers, inspectors and stenographers. Cost 2½ per cent.

Mobile, Ala. Architect is selected by school board who has charge of entire work. Cost between 5 and 6 per cent depending on structure.

Nashville, Tenn. New charter provides for competition in selecting plans. No experience as yet to establish rate of compensation.

New Britain, Conn. Competition is the rule. Cost about 6 per cent.

New Haven, Conn. An architect is employed from job to job. The engineering work is performed by a regular employee of the board. Architects service costs from 3 to 6 per cent.

Newark, N. J. Architect is retained for each job on a 6 per cent compensation basis.

New Orleans, La. Architect is employed by the year at salary of \$6,000. Engineering service is also provided by regular employee. Approximate cost for 1923 about 2¼ per cent.

New York City, N. Y. The architect is employed by the year. The salary formerly was \$12,000 and has now been increased to \$20,000 a year. Next year it will be \$25,000. The board of education maintains a fully organized architects department with electrical, plumbing, heating and ventilating departments, employing 75 persons. The total architects staff consists of 550 persons. The cost has not been reduced to percentages. It varies considerably depending on character of work.

Niagara Falls, N. Y. The local architects at the request of the school board organized an association of architects to work out a school building program and select one of their number to supervise each building. Cost 1 per cent for consulting and 5 per cent for drafting and supervision.

Norfolk, Va. The board selects the architect who provides the plans and the supervision at the standard rate of compensation.

Oklahoma City, Okla. The school board hires its engineers direct. The architect receives 5 percent for plans for supervision.

Omaha, Nebr. The board selects an architect on a commission basis who is expected to provide engineering service and supervision. Compensation ranges from 5 to 6 per cent.

Passaic, N. J. An architect is employed at \$2,500 a year plus fees on new buildings. The cost is about 3½ per cent, plus 1½ per cent for heating and ventilating contracts.

Paterson, N. J. The architect is employed by resolution of the board of education. Compensation 2½ per cent for plans and specifications, 2½ per cent for supervision of construction.

Peoria, Ill. The architect is employed on a cost percentage basis. He provides both engineering service and supervision. Cost 5 per cent.

Philadelphia, Pa. The board of education employs an architect at \$5,000 a year and also maintains a staff of draftsmen and construction superintendents. For 1922 the cost was 1.294 per cent.

Pittsburgh, Pa. The board of education elects an architect for each new project from a local group of architects. The board maintains a building department which at times provides the engineering service. The cost is about 4½ per cent on general contracts and 2½ per cent on domestic engineering.

Portland, Me. The architectural and engineering service is selected by a special commission on a percentage basis. Cost not ascertained.

Portland, Ore. The school board employs an architect who receives \$250 a month. He in turn engages the engineering service. The supervision is done by the architect but the superintendent of properties employed by the board

also inspects the work. Total cost 6 per cent.

Providence, R. I. A department of public buildings is maintained by the municipality which designs new buildings and superintends their construction. The board of education stands in an advisory attitude. The percentage cost not established.

Racine, Wis. Schoolhouse plans are subject to competition. The cost is 3 per cent for plans and specifications and 2 per cent for supervision.

Reading, Pa. The school board selects an architect, usually one who has done work for the board before and pays him at the rate of 6 per cent of total construction cost.

Richmond, Va. The board elects an architect for each project and pays 5 per cent on total cost for entire service.

Rochester, N. Y. The board of education appoints the architect who receives 3 per cent. It also employs engineering service and maintains a corps of draftsmen. The total cost has not been reduced to percentage figures but is believed to work out on the customary basis.

Rockford, Ill. A reputable firm of architects is employed by the year at a salary of \$10,000. This is flat for all services, except those of the building superintendent who is also employed by the board and who supervises the construction labors.

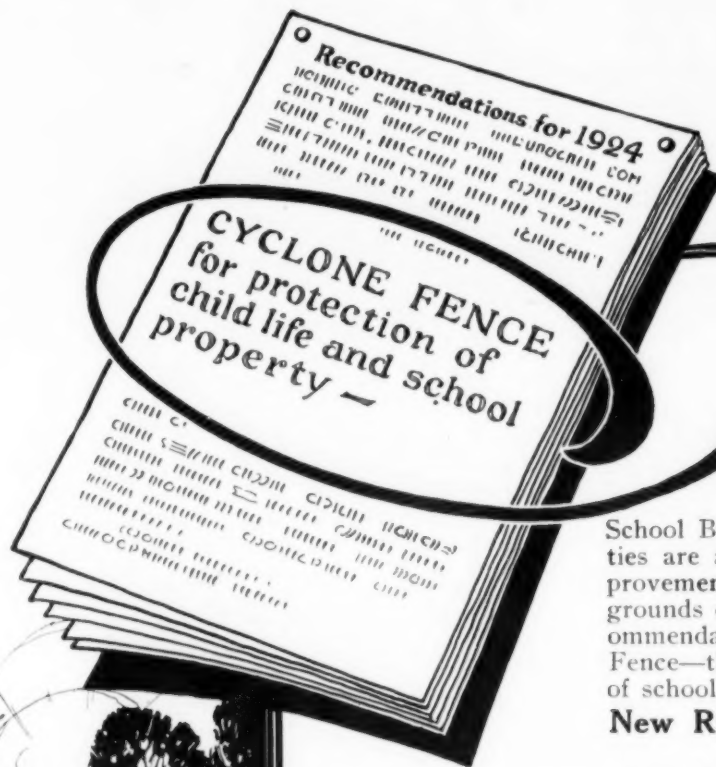
Saginaw (W. S.), Michigan. The board upon recommendation of superintendent of schools appoints architect who provides entire service. Cost 3 per cent.

Scranton, Pa. The school board selected architect for junior high schoolhouse project. An inspector is also employed at \$275 a month. Cost 6 per cent.

Saint Louis, Mo. The board of education employs a commissioner of school buildings at a salary of \$9,000 a year. The board also maintains a building department. All draftsmen, engineers and superintendents are under the direction of the commissioner. The last building contracted for in September last will cost \$256,008. The preparation of the plans and specifications cost \$2,224.45 or .87 per cent of the cost. The per cent on annual cost of conducting department not estimated.

(Continued on Page 87)

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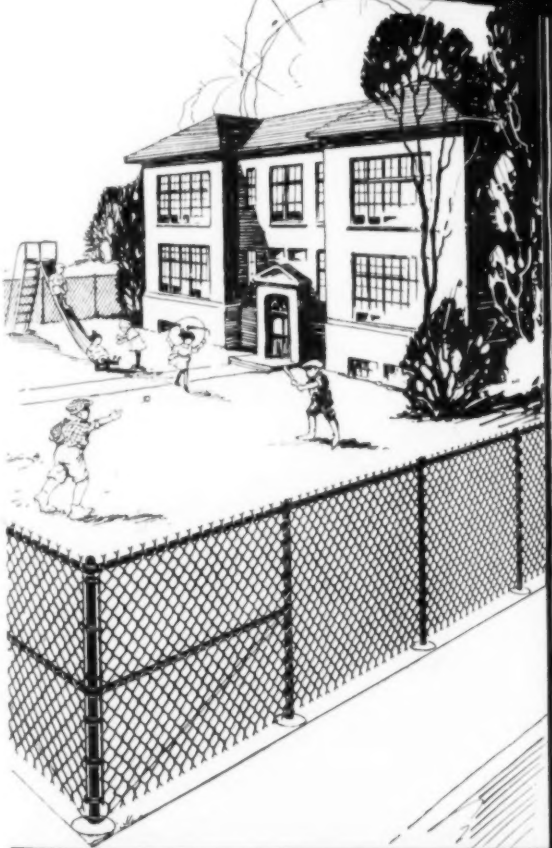
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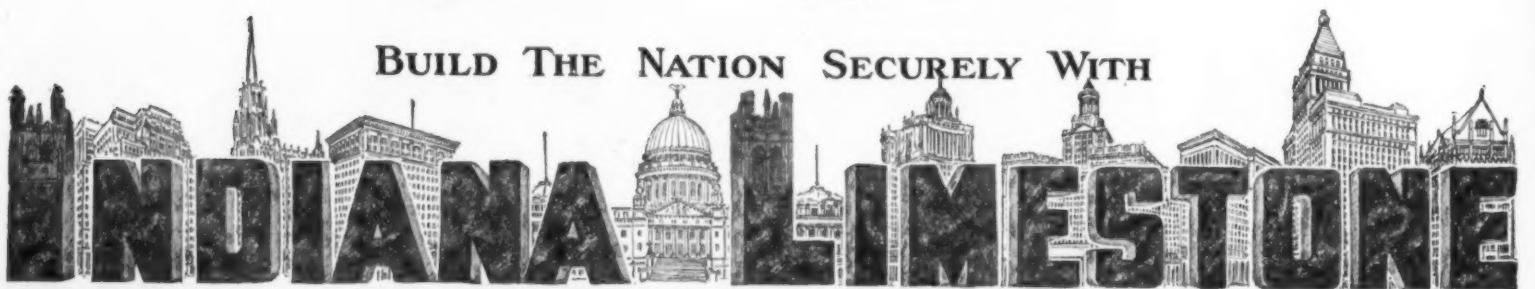
During the early months of the New Year thousands of prospective builders will visit the famous Indiana Limestone district. Here in this picturesque land the world's greatest natural stone deposit sprawls out over a vast area of tumbling countryside. When the early spring operations are in full swing, the whole district becomes a thrilling spectacle of engineering skill.

Bedford and Bloomington, the home of Indiana Limestone—midway between Indianapolis and Louisville on the Dixie Highway—are easily accessible and just an hour from French Lick Springs. To meet the swelling tide of commerce, Bedford recently opened the new Greystone Hotel, America's finest one hundred room hostelry. There and at the Bedford Stone Club the guest will find genuine hospitality.

Builders benefit by visiting the Indiana Limestone district, for it provides a spectacle of fascinating interest and educational value.



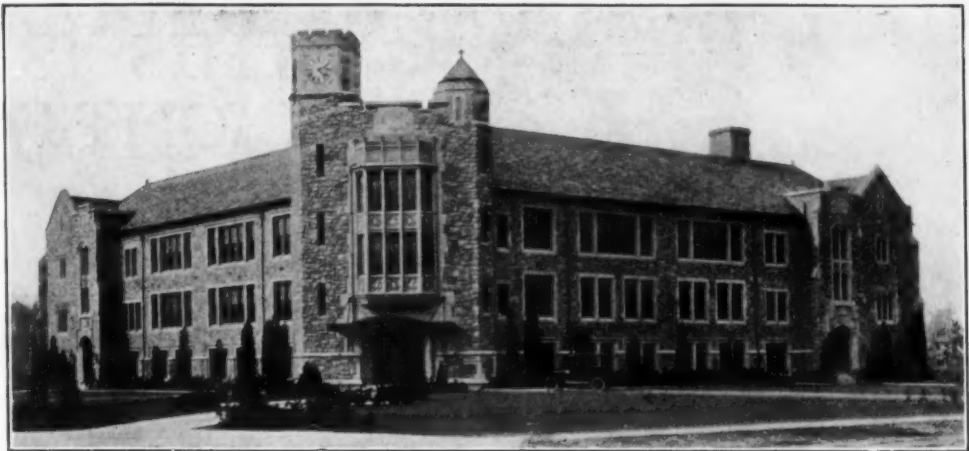
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Bedford, Indiana



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SLATE

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NATIONAL SLATE ASSOCIATION, 757 DREXEL BUILDING, PHILADELPHIA, PA.

(Continued from Page 84)

Saint Paul, Minn. The architect is employed by the city at a salary of \$4,000 a year and works as the head of the Department of Parks, Playgrounds and Public Buildings. The architectural cost is approximately 27 per cent of contract cost.

Salt Lake City, Utah. The board of education employs a superintendent of buildings who is also the architectural engineer. The architect chosen for any schoolhouse project is under the superintendent. The purely architectural service is about 3½ per cent of contract price.

Sacramento, Calif. An architect is chosen by the board of public works who provides the necessary service at a cost of 6 per cent of contract price.

San Antonio, Texas. The board employs an architect by the year at a flat fee. Amount not stated. Cost about 5 per cent.

San Diego, Calif. The board of education on recommendation of superintendent retains an architect. During period of construction the board also employs inspectors. The total cost of service is 6 per cent.

Savannah, Ga. The board of education has augmented local architectural service by calling in specialists in advisory capacity. The architect must provide the necessary engineering service and supervision. Cost 5 per cent.

Seattle, Wash. The board has employed an architect by the year at \$5,000. At present he is employed for half time only at \$300 per month. The board also employs engineering and supervision service which is under the direction of the architect. The cost varies but does not exceed 5 per cent of construction prices.

Sioux City, Ia. The school board employs an architect for each project who is expected to provide the attendant service. The total cost is estimated at 3½ per cent.

Somerville, Mass. The firm of architects having charge of a schoolhouse project is selected by the mayor. The same official also selects the engineer. A superintendent is chosen to watch the construction. The total cost is 6 per cent.

South Bend, Ind. The system of competitive plans does not prevail. The architect is em-

ployed by the board who in turn provides plans, engineering and supervision service. Cost 5 per cent.

Springfield, Ohio. An architect is employed for each project who must furnish the complete service. Cost 5 per cent of contract price.

Springfield, Ill. The board of education employs a superintendent of buildings at \$3,000 per year. On new building projects an architect is chosen who in turn provides draftsmen and engineers. The superintendent attends to the inspection. The architect receives the usual fee.

Syracuse, N. Y. The architect is employed by the board of estimates and appointment. Upon his recommendation the engineers qualified in heating, ventilation, plumbing, and electricity are designated by same body. Cost 3½ per cent.

Tacoma, Wash. The school board selects the architect for any given schoolhouse project who must provide the necessary service. The board employs its inspectors direct. The cost of the architectural service is 3½ per cent.

Terre Haute, Ind. The board has in times past employed a specialist in an advisory capacity. It usually, however, employs an architect who furnishes the complete service, paying 3 per cent for plans and 2 per cent for supervision.

Toledo, Ohio. The school board employs an architect's firm on a five-year contract at \$7,500 a year. The board also employs draftsmen and a superintendent. The architect service cost 2½ per cent.

Trenton, N. J. The board of education retains a consulting architect with a local architect under him. It also employs a superintendent. The architect must provide plans, engineering service, etc. The cost is estimated at 5 per cent of construction price.

Troy, N. Y. When a new school building is to be constructed an architect is chosen. The city engineer provides the engineering service. The total cost is 6 per cent.

Waterbury, Conn. The school board selects an architect for each particular job and pays him 5 per cent of the total cost.

Wichita, Kans. An architect is chosen for each new building project and is paid 3 per

cent for plans and specifications, and 2 per cent for supervision.

Wilkesbarre, Pa. An architect, who also performs the engineering work, is employed by the school board at \$5,000 a year. The board also employs draftsmen. The cost has not been ascertained because the system has not been in operation long enough.

Worcester, Mass. The superintendent of public buildings who is an architect employs the architect for any given schoolhouse project, lets contracts and oversees construction. He also employs the necessary draftsmen and engineers. The superintendent is elected by the city council and works in collaboration with the school board. Cost not ascertained.

Utica, N. Y. An architect is employed for each school, usually a different one. Such architect must supply all the attendant service. Cost 6 per cent of construction price.

Yonkers, N. Y. The school board once employed an outside expert, but only once. An architect is usually employed on a percentage basis. Such architect must provide plans and specifications, engineering service, and construction supervision. Cost 4 per cent.

Youngstown, Ohio. The school board selects plans on a competitive basis and has paid 2½ per cent on total cost of construction.

Summary and Conclusion

The compensation accorded for architectural service varies considerably. Nor does the percentage rate as reported always reveal the real cost. Sometimes a salaried official connected either with the board of education or the municipal government shares in the supervisory labors connected with the construction of a school building.

It will be noted, however, that the total cost of architectural service, namely, providing plans and specifications and engineering service, together with construction service, ranges between 5 and 6 per cent of total construction cost.

The purely architectural service runs at a lower percentage cost where the board of education or some branch of the municipal govern-



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ment provides some part or all of the engineering or supervisory service. Some cities maintain a building department or a superintendent of public buildings. Usually such department or official superintends or supervises the construction work. In many cities, too, the board of education employs a superintendent of buildings who looks after all repair jobs and incidentally supervises new construction.

In the larger cities where boards of education maintain a fully organized building department, where repairs and renovations, as well as additions and new construction projects are constantly under way, it is extremely difficult to reduce the cost of the purely architectural labor to a percentage basis. Suffice it to say that, while this cost seems in some instances extremely high and in others extremely low, local conditions, which cannot always be fully entered into, prevail.

No doubt, where construction labors are constantly in progress and where certain labors have been standardized, the cost may be brought down to a minimum. On the other hand where schoolhouse construction is semi-periodical only the costs for architectural, engineering and supervisor service are essentially higher.

The final conclusion must be that the prevailing cost ranges between five and six per cent of the construction price, and that where variations from these figures are encountered the difference in cost must be attributed to the fact that engineering and supervision are assumed by the municipality, or are due to a different administrative division of the whole service.

The above survey also reveals the fact that the large cities have largely abandoned the competitive system and employ an architect of standing and of experience, either by the year or from job to job, to plan and build their schools.

WHAT ABOUT THE SCHOOL SITTING SHORTAGE?

(Continued from Page 29)

New School Construction to Meet the Shortage.

New school construction during the last three years has reduced considerably the schoolhouse shortage resulting from the lack of school construction during the war and the few years following. Some of the building programs started in 1920 have now been completed and many are nearing completion which will materially reduce the present school sitting shortage throughout the country.

Practically every large city in the country is constructing new schools and from the contracts let during the last six months and new construction planned for the coming year, as well as contemplated building programs, it is evident that the school authorities are meeting the situation as quickly as the local conditions will permit. In the cities of 100,000 and over, approximately \$120,000,000 worth of new school construction is under way and from \$75,000,000 to \$100,000,000 worth of new school buildings are being planned.

The following information covering a number of the larger cities is indicative of the building activities and the building programs of most of the larger cities in the country. School surveys are now being made in a number of these cities.

Birmingham is completing a survey which will undoubtedly result in a definite building program to relieve the existing shortage. The school survey of Philadelphia schools which began in 1917 is completed, covering every phase of the school system taking into consideration the existing building conditions and the future needs.

Los Angeles has under construction twelve elementary, four junior high and three high

schools representing an expenditure of \$17,400,000. San Francisco, with no lack of school housing, has approximately \$2,000,000 worth of schools under construction and will begin soon school construction costing \$10,000,000 with \$12,000,000 available.

Denver is meeting the school sitting shortage with \$8,500,000 worth of new schools. Atlanta has \$4,500,000 worth of new construction under way including twelve elementary, three junior high and three high schools. Chicago has from \$9,000,000 to \$10,000,000 worth of new construction under way and at the election a few days ago, bond issues were voted favorably and a \$20,000,000 program for 1924 is in prospect.

New York has a \$35,000,000 program for 1924. The increase in population with shifts and changes in the cities like New York and Chicago, point to a continued shortage of school space, in spite of the enormous volume of school construction which has taken place particularly in New York City.

The board of education in Cleveland is meeting the situation with a carefully planned building program. During the four year period of 1920 to 1924, the building program involved expenditures of \$24,000,000 and the four year period following includes a building program of \$20,000,000. At the present time eight new school buildings are under construction with an estimated value of \$7,200,000.

St. Paul is completing three elementary schools, a junior high school under the \$5,000,000 bond issue voted in November, 1922. Plans for two junior high schools are nearing completion as well as for three grade schools and three or four additions to old buildings. The plans for next year involve a junior-senior high school as well as three grade buildings.

(Concluded on Page 90)

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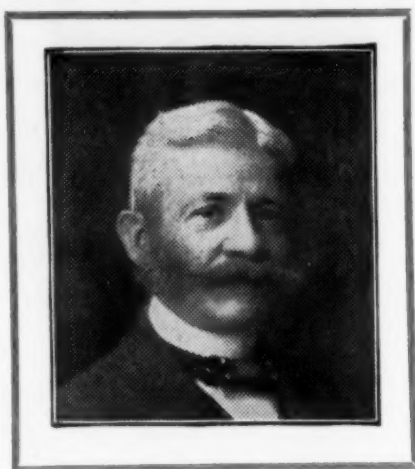
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(Continued from Page 88)

School building programs in the smaller cities having school shortages are well under way. The conditions in the following cities are quite typical of the situation in most of the cities of less than 100,000 population:

Tuscaloosa, Ala., is building two elementary and one high school. Colorado Springs, Colo., is constructing three junior high schools and additions including fourteen rooms to elementary schools. Bridgeport, Conn., has two elementary and one high school under construction. Waukegan, Ill., is building an elementary and high school. Ft. Wayne, Ind., has two elementary schools under construction and will take bids for two more before the close of the year. Gary, Ind., is building three elementary schools. In Ft. Madison, Ia., a new high school will soon be completed. Frankfort, Ky., is building a new high school. Grand Rapids, Mich., is building additions to elementary, junior high and high schools. Contracts for a million and a half dollars' worth of new construction will soon be let.

In Moorhead, Minn., the schoolhousing situation is very satisfactory due to two new buildings just completed at a total cost of \$550,000. In Wellston, Ohio, a new high school will be completed by April, 1924. Amarillo, Tex., has just completed the first part of a building program including a new high school and three elementary schools. New construction amounting to approximately \$275,000, is under way. The reorganization of the school system in Bellingham, Wash., establishing several junior high schools and the building of a half a million dollar senior high school is under way to take care of a school population increase of 1,100 children. Kenosha, Wis., has a two million dollar program under way covering a period of five years. The culmination of a mil-

lion and a half dollar program at La Crosse, Wis., during the past five years has provided adequate facilities. Two new buildings are now under construction costing over \$400,000.

Sitting Shortages and New Construction Always Present.

There has always been a shortage of adequate school facilities to a more or less degree in the various parts of the country and an analysis of the situation indicates that this condition is practically an ever-present problem of school administration. The school sitting shortage at the present time is largely caused by the cessation of normal building programs to meet the natural increase during the war and the years following. However, there are a number of other factors which continually create school sitting shortages.

- 1st. The natural increase in population.
- 2nd. The shifting of school population.
- 3rd. The obsolescence of school buildings.
- 4th. The increased demands for education.
- 5th. The lengthening of compulsory school attendance.
- 6th. Increase in high school enrollment.
- 7th. The enlarged scope of our school system as expressed in the broadening of the school curriculum including vocational education, the supervision of the physical welfare of the child and social and recreational activities.

New construction must be on a continuous basis to meet these ever increasing demands. As indicated, schools are being built as a part of definite building programs covering periods of years. The cities throughout the country must not only meet the increasing demands, but many of the school buildings constructed from 15 to 30 years ago are no longer adequate and must really be replaced with new buildings. Therefore, the situation relating to school hous-

ing takes into consideration two factors, first, new construction to take care of the growth of school population, second, the rebuilding of schools no longer adequate.

Before the war the annual increase in school property was approximately \$100,000,000. The present conditions indicate that it will take from two to four years before the shortage resulting from the lack of construction during the war years will be adequately met with new construction. Following this, the normal increase in school property will continue at a much higher level than before the war due to the increased growth and progress of our educational system.

THE ILLINOIS SCHOOL BOARD CONVENTION

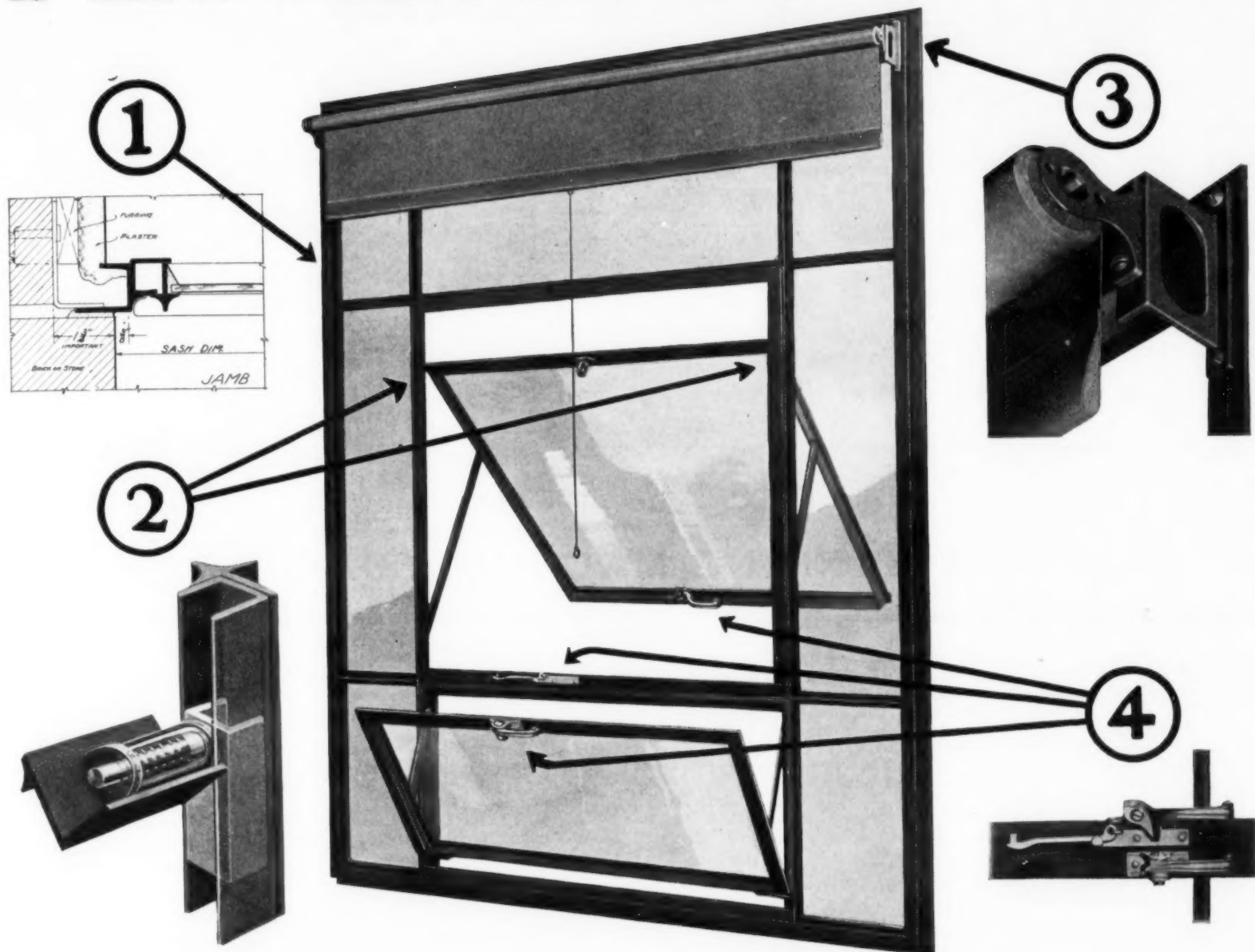
The meeting of the Illinois state school board association met at Urbana in conjunction with the city superintendents association on November 22nd. The principal address was delivered by Dr. Charles E. Chadsey who spoke on the "Relation Between Boards of Education and Superintendents."

The organization elected the following officers: President, A. B. Wight, Chicago; vice-president, R. W. Bardwell, Rock Island; secretary, E. W. Anderson, Charleston; treasurer, E. W. Powers, Fairbury. Executive committee; M. G. Hogge, Chicago, William Harris, Urbana; W. J. Hamilton, Oak Park; F. G. Goddier, Chicago Heights, and H. E. Fisher, Streator.

Next year's meeting will be held October 29 and 30 at Peoria, Ill.

—The Essex County board of New Jersey in prohibiting smoking in polling places has posted large red placards in conspicuous places in those buildings used as polling places. A special notice has been sent to the clerk of the board of elections calling his attention to the rule and giving authority for calling the police where necessary. For a number of years the board has co-operated with the board of elections in allowing the use of school buildings as polling places.

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prevent rattle and assist in holding the ventilator open at the desired angle without the use of chains or stays.

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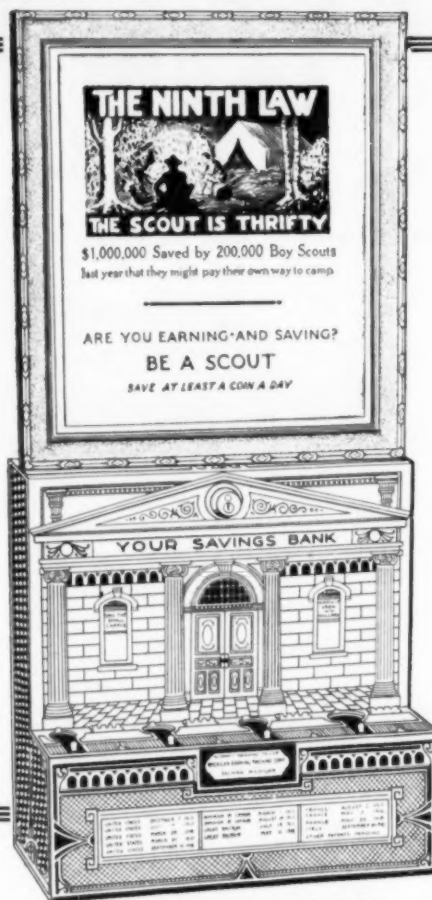
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A manual of operation for the Plan has just been prepared setting forth the objects of The Thrift Army, the duties of the members, the equipment needed, together with a clean-cut exposition of how easily the method can be applied in every school in the United States.

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THE READING SCHOOL PLANT SURVEY

The report on a school plant survey has been issued by the board of school directors of Reading, Pa. The survey was made by the bureau of school building of the state department of public instruction. It is prefaced with a statement by J. George Becht, state superintendent, who sets forth the purposes of a survey as follows:

"In times past it was believed that directors, superintendents and teachers had discharged their duty, so far as housing the pupil was concerned, when they had provided four walls, a roof, hook for wraps and a seat. The effect of the school plant has such a direct bearing upon the health, progress in school and the future of the child that school authorities and the public generally are no longer content to conform to old traditions and obsolete school-house practices.

"The public insists upon knowing, (1), what kind of school is to be housed in the new building; (2), do the proposed accommodations guarantee a just return to pupils for the time spent in school and to the community for the money expended; (3), trends, shifts and increase or decrease in total and pupil population over a period of years; (4), what will it cost? The taxpayer has a right to know how the pupils of his community are housed and whether or not the money voted by him for school buildings, grounds and equipment will be merely spent or wisely invested. These factors can be determined only after a thorough and scientific study of the school plant has been made and a careful estimate presented covering both present and future needs."

In the evaluation of the present school plant the Strayer-Englehardt score card was used. This score is based on 112 detailed items. The maximum of 1,000 points on any school building is distributed among five major items as follows: site 125, building (structure) 165, service systems, 280, classrooms 290, special rooms 140 points.

In applying this measurement to the schools of Reading it was found that one of the high schools scored 850 points, another 556 and still another 513 points. The elementary schools ranged all the way from 272 to 787 points, the larger number clinging to within 300 and 400

points. Five schools come below the 300 mark.

The survey was made under the personal direction of Dr. Hubert C. Eicher, director of bureau of school buildings of the department of public instruction. Dr. Eicher was assisted by Ellwood B. Cassel, Frank M. Highberger, Dorr E. Crosley of the department. He also brought to the service of the survey, Landis Tanger, superintendent; Amanda E. Stout, assistant superintendent, Adam H. Leader, superintendent of buildings; J. Lehn Kreider, director of practical arts; James A. Shook, principal junior high school; Alexander A. Harwick, director physical education; Leon W. Menget, director of visual education.

A considerable portion of the study is devoted to Reading's school finances. The total income for 1921-22 was \$1,726,248.16. The average daily attendance was 15,352 thus fixing the per pupil expenditure at \$111.88. In arriving at comparisons the investigators enumerate the following cities together with the per pupil cost:

Cities	Population	Per Pupil Cost
Manchester, N. H.	78,384	\$243.41
Niagara Falls, N. Y.	50,760	214.54
Canton, Ohio	87,091	204.92
Rockford, Ill.	65,651	198.57
Tulsa, Okla.	72,075	193.23
Fort Wayne, Ind.	86,459	186.68
Long Beach, Cal.	55,593	176.77
Lincoln, Neb.	54,948	170.55
San Diego, Cal.	74,683	159.67
Erie, Pa.	93,372	150.00
Chester, Pa.	58,030	145.28
Altoona, Pa.	60,331	143.84
Bayonne, N. J.	76,754	141.91
East Orange, N. J.	50,710	139.93
Harrisburg, Pa.	75,917	133.88
Springfield, Ohio	60,840	133.80
Wichita, Kans.	72,217	132.32
Elizabeth, N. J.	95,783	122.98
Sioux City, Ia.	71,227	116.93
Davenport, Ia.	56,727	114.49
Lansing, Mich.	57,327	113.68
St. Joseph, Mo.	77,939	108.92
Utica, N. Y.	94,156	97.49
Wheeling, W. Va.	56,208	94.49
Portland, Me.	69,272	94.40
Savannah, Ga.	83,252	94.11
Brockton, Mass.	66,254	93.20
El Paso, Tex.	77,560	92.87
Passaic, N. J.	63,841	92.29
Wilkes-Barre, Pa.	73,833	85.25
Somerville, Mass.	93,091	73.48
Reading, Pa.	107,784	111.88
Total, 32 Cities	2,318,150	\$136.70

The report is liberally illustrated and many of the more important facts are shown in tables and diagrams.

The Reading board of school directors consists of John H. Seasholtz, president; Eugene F. Hendricks, vice-president; Augustus M. Brown, treasurer; Oscar B. Heim, secretary; Joseph L. Gebis, William H. Luppold, Harry P. Yost, William Diener, Charles C. Miller, Edward J. Deininger, Dr. Margaret Hassler.

BUILDING AND FINANCE

The board of education for Barnesville, O., has sold bonds to the extent of \$75,000 for the erection of a combined auditorium-gymnasium and classrooms to relieve the congestion in the schools. The new building is to house the junior high school.

The architect for the new George Sykes Manual Training school at Rockville, Conn., is Walter H. Chambers of New York City. Frederick Rabbe is his assistant. The H. Wales Lines company of Meriden are the contractors and builders. An honor board is to be erected near the new building.

The new Washington school in New Britain, Conn., was formally opened to the public the last of November. It will house 900 children, but 1,250 children are enrolled in the school using the platoon system.

Warren, O. On November 6th the voters approved a bond issue of \$926,200 for the Warren G. Harding Senior High School. The building will be located on a ten-acre site and will provide accommodations for 1,200 students. Messrs. Keich, O'Brien and Hosker, Warren, O., are the architects.

Endicott, N. Y. The George F. Johnson grade school is nearing completion. The building contains 21 classrooms, an auditorium, a gymnasium, and dental clinic, and cost \$235,000.

Barrington, R. I. At the last financial town meeting, \$60,000 were appropriated for the year 1923-1924. In 1919 the appropriation was \$30,000. The school enrollment is now 1,009 as against 660 in 1919. At the meeting it was also decided to appoint a committee which is to study the means for obtaining additional room for the school system. The committee is to make its report not later than March.

Just Like an Insurance Policy

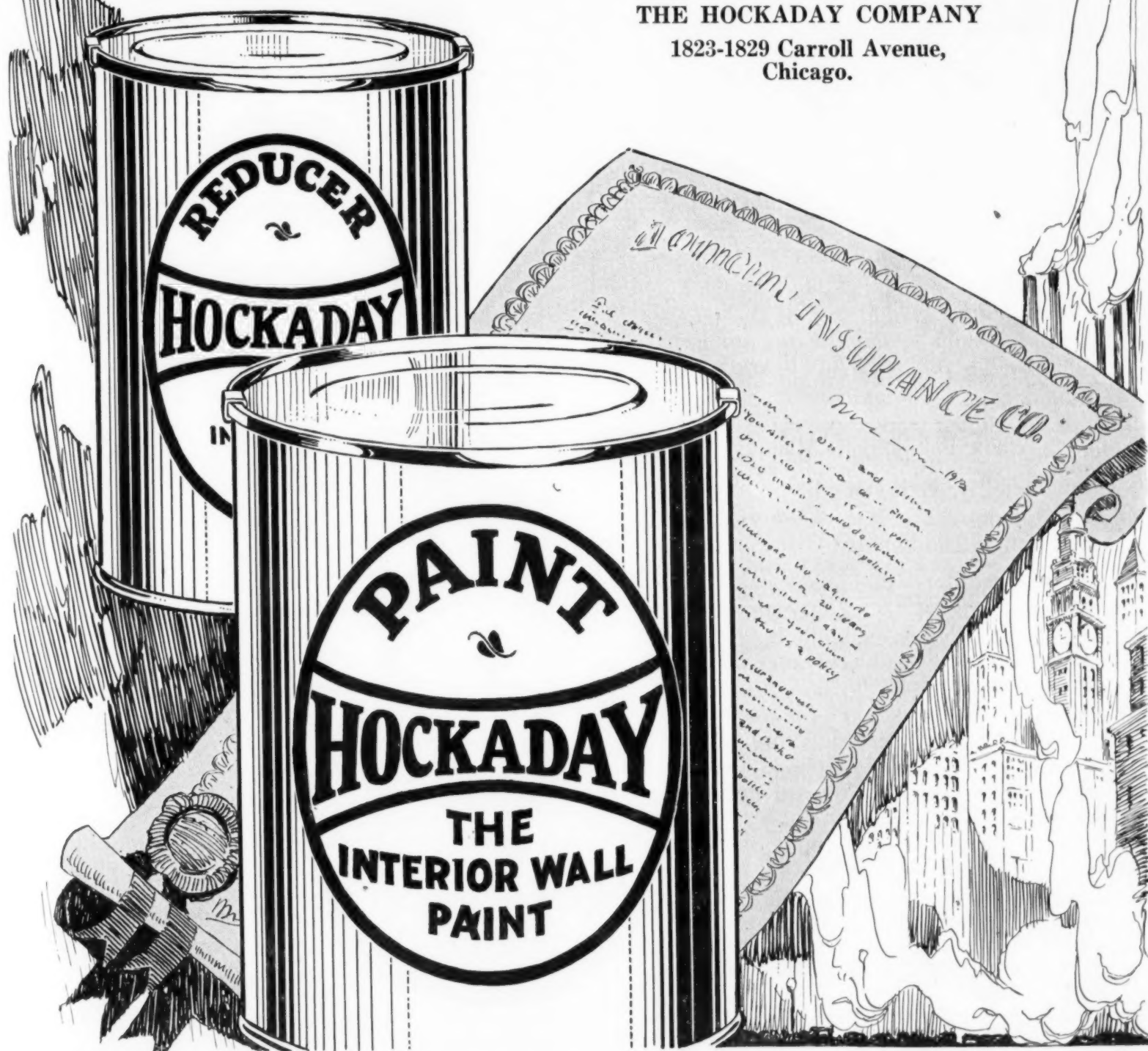
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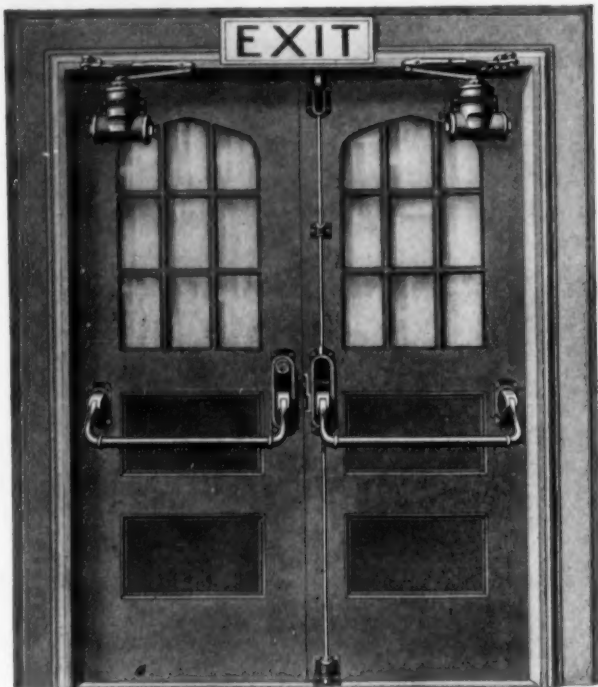
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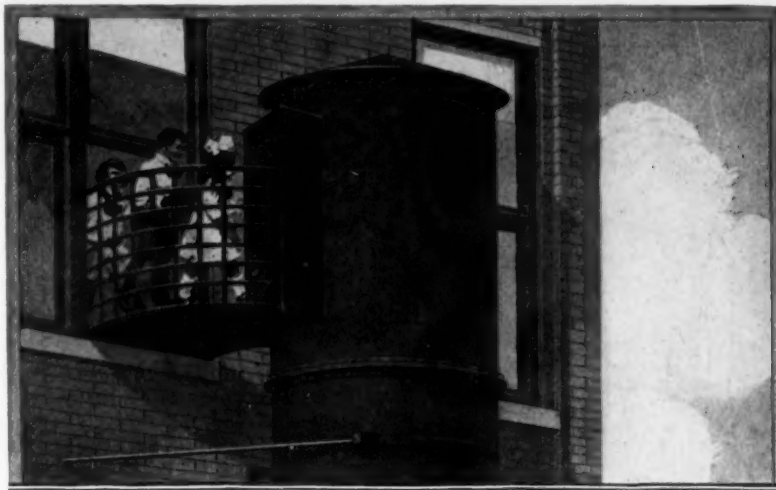
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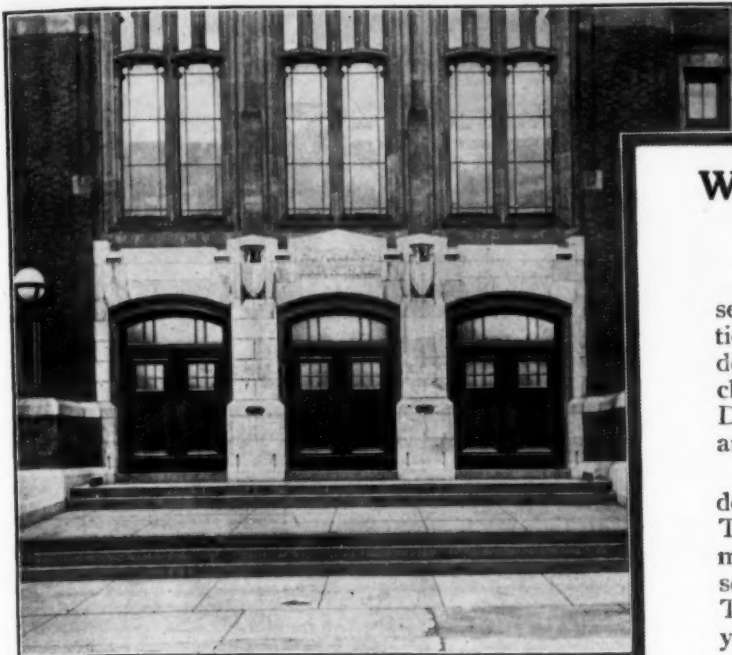
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The above illustration shows three sets of Dahlstrom entrance doors in the Hutchinson High School, Buffalo, N. Y., after seven years of service.

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Below is shown an unretouched photo of a pair of wood entrance doors in a school after seven years service.



SCHOOL FINANCE AND BUILDING

—Bridgeton, N. J. A new high school was dedicated on November 21st. The building was erected at a cost of \$250,000.

—On November 23rd bonds were sold at Royal Oak, Mich., for the completion of the George Washington school, now partly constructed. Bonds were also sold for \$25,000 for the completion of another elementary school. Both these projects will be rushed to completion to provide housing facilities for 600 children on part time.

—An open air memorial theater is planned at the northwest corner of the grounds of St. John's high school, Darlington, S. C. The plans for the building which are in process of completion, provide adequate accommodations for the students of both the high and grammar schools. The stage will be large and well suited to the needs of the school.

—Barberton, O. On November 6th the voters approved a \$250,000 bond issue for an addition to the high school and one to the Highland school.

—The board of education of Bonne Terre, Mo., has employed an architect to conduct a survey of the school plant. The architect will suggest the best means of enlarging the present high school.

—Scotia, N. Y. At a meeting on November 8th, an additional \$70,000 in bonds were voted to complete and equip the new high school. The building which will cost \$340,000 will be ready in September, 1924.

—Bend, Ore. Plans have been made for the construction of a high school of 35 rooms for the accommodation of an increasing enrollment.

A five-room addition to the Kenwood School was completed in December.

—Summerville, S. C. On November 27th, the citizens approved a bond issue of \$75,000 for

the erection of a high school and the remodeling of present buildings. The buildings are to be ready for use at the opening of the new school year in 1924.

—Tarboro, N. C. The town voted to issue \$130,000 in bonds for the erection of new buildings and the payment of a small indebtedness. A colored high school to cost \$30,000 is nearing completion. A white high school is to be ready for use in September, 1924.

—Marietta, O. On November 6th, the citizens approved a bond issue of \$450,000 for a high school. At the same time the citizens voted one and one-half mills for additional current expense for three years.

—Plans have been approved for the new high school to be erected at Slayton, Minn.

—Orange, Calif. A bond issue was voted this year for a six-room school building. A similar bond issue was voted two years ago for the same purpose.

—Denton, Tex. As a result of a bond issue voted last spring, a school building program involving an expenditure of \$205,000 has been undertaken. Of the total amount, \$60,000 is for a one-story elementary school, and \$145,000 for a high school.

—Knoxville, Tenn. The board has adopted a budget of \$820,000, which is an increase of nearly \$100,000 over last year.

The board has under consideration a bond issue of a million-and-a-quarter dollars, to be submitted to a referendum vote of the people. One-third of this amount will be expended for building additions to present schools, and the remainder will be used for the erection of one or more high schools. The total enrollment this year is 19,500 as against 18,000 last year.

—Port Jervis, N. Y. The new high school has been completed and the building will be occupied early in the spring.

—Altoona, Pa. The school district has completed the last unit of a central heating and power plant. The plant is adequate for four large buildings, comprising one senior high school, one junior high school and two grade buildings. Three of these schools have been operated for the last year at a greatly reduced cost over the former plan of heating service.

—At Greenfield, O., a new school plant of three buildings is proposed, to include the present high school, a new elementary unit, an

annex to house the swimming pool, agricultural laboratories, cafeterias and shops, and an athletic field. The new consolidated group which is to be operated in September, 1924, will house 1,600 students and will cost about \$700,000. The ultimate capacity of the plant is 2,000 students and the total cost of the work will be \$1,500,000. The buildings have been designed by Mr. William B. Ittner, St. Louis, and are being erected with the assistance and advice of Mr. E. L. McClain, who formerly had made the gift of the high school to the city.

—Two new grade buildings have recently been completed at Ashland, Ky.

—Chester, S. C. A high school costing \$175,000 will be occupied in June. The building will contain twenty classrooms and will have equipment for the special departments. There will be a gymnasium stage and an auditorium seating one thousand persons. The manual training department will be housed in a separate structure.

—Cooper, Tex. The school district will erect a high school during the present year at a cost of \$75,000.

—The contract for the new East High School at Bridgeport, Conn., was awarded on October 24th, at a cost of \$965,956. The building accommodates 1,600 students and makes provision for academic, health and vocational instruction. Messrs. Caldwell, Walker and Beckwith, Bridgeport, are the architects. Mr. Wm. B. Ittner, St. Louis, Mo., was the consulting architect.

—A contract was let on November 8th for the Emerson School, Dayton, O., at a cost of \$498,000. The building which will be organized on the platoon plan, accommodates 1,600 pupils in the elementary and junior grades including the kindergarten. Mr. Wm. B. Ittner was the consulting architect and Messrs. Gebhardt and Shaffer were the building architects.

—The contract for the high school at Waseca, Minn., was awarded on October 30th, at a cost of \$348,000. In addition to classrooms, the building provides an auditorium for 800 persons, a gymnasium for two classes, a library, a teacher-training room, study rooms, rooms for the domestic arts and sciences, shops, and a cafeteria. Mr. Wm. B. Ittner was the architect.

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GRANITE

—Hickory, N. C. A valuable tract of land, comprising eleven acres, has been donated to the trustees of the Hickory schools by the Corinth Reformed Church of Hickory. A bond issue of \$250,000 has been approved and construction on a new high school will be started about the first of the year.

—A new high school has been completed at Newton, N. C., at a cost of \$110,000. A large tract of land adjoining the high school property has been purchased as a site for an athletic field for the high and grammar school students.

—A new high school will be erected at Perry, Okla., at a cost of \$150,000.

—Miami, Okla. A senior high school built on the one-story unit plan, has been erected at a cost of \$100,000. The building is near the junior-senior high school and has a commodious gymnasium and a large auditorium. It has been equipped with the most modern seating and apparatus.

—The county board of education at Lebanon, Tenn., has announced that owing to a shortage of funds the school term will have to be cut to seven months. The board is contending against unpaid warrants and bank overdrafts amounting to \$35,231.48. An appeal to the courts to legalize a loan will be made.

—The new Maple Street School at Rockville, Conn., was completed ready for occupancy on December first. In addition to classrooms, the building contains an assembly hall seating 800 students, a recreation room, kindergarten, and two large store rooms. The classrooms are well lighted and are provided with electric lights and electric clocks. Call bells and drinking fountains are located in the corridors.

—The four high schools of Newark, N. J., have been placed on double shift. Superintendent David B. Corson is planning to establish two schools in one building. He proposes that the morning school open at 7 o'clock and close at noon. The afternoon school will be open from 12:30 to 5:30 P. M.

—Architect William H. Gompert who is in charge of the New York City school building program announces that the program involves the expenditure of \$191,000,000 and will supply about 153,000 seatings. Mr. Gompert gives

credit to his predecessor in the following words: "In the development and perfection of the present school building plans the valuable and conscientious services rendered by C. B. J. Snyder must not be forgotten, as the present-day school building of this country owes its development largely to his efforts. That his ability and genius are recognized is shown by the fact that he is retained frequently as consultant in school building projects and recently the New York Chapter of the American Institute of Architects awarded him the gold medal for meritorious work."

—William H. Gompert, architect for the New York City board of education announced recently that \$9,000,000 worth of schoolhouse work would go on "the bidding table." After that the board stands ready to place from \$6,000,000 to \$10,000,000 worth of work each month for at least another year.

—Although pressed for more funds the board of education of Detroit, Mich., did not place the desired increase of the bond limit on the ballot at the November election.

—The school system of Tacoma, Wash., has saved \$70,000, in being able to sell its bond issue of \$2,400,000 to the state rather than to the banks in open market. The latter would have exacted an interest rate of five per cent while the state exacts only four and one-half per cent.

"A crisis in the history of tax support of schools is at hand. The public is asking for proofs that the increased expenditures are justified. Newspaper editorials are asking for assurance that certain policies of the school are the best policies." So says the educational research bulletin of the Ohio State University in a recent issue. "Public-spirited people are questioning whether the state can afford to increase its support to schools indefinitely; and whether such a policy is to the best interests of the schools. The commonest source of school revenue has been a property tax which seems to have almost reached the equitable limits of its resource."

"Building costs are high at present but there is no assurance that there will be any decided reductions in the next two or three years," says the Piqua, O., Democrat-Call. "The fact that

all building operations have been delayed the past year and that thousands of contracts are waiting for better prices makes more certain the improbability of reduced costs in the near future."

Cuts in Educational Budget Hit by Mark Keppel

The first broadside at Governor Richardson's drastic cuts in California educational funds was fired at the convention of the state teachers' association, northern district, recently by Mark Keppel, Los Angeles County superintendent and president of the California Council of Education.

"In spite of Governor Richardson," Mr. Keppel declared, "as long as the people of California want education they will continue to raise money for school purposes where the wealth is and distribute it where the children are."

Referring to constitutional amendment sixteen, which provides for a state expenditure of \$30 annually for every school child, Mr. Keppel said:

"The Governor doesn't like this amendment, and the school people of California who have the education and welfare of the children at heart don't care very much what the Governor thinks. As long as the people seek to have their children educated and properly educated, that amendment will continue to be on the law books of our state."

Wood Loses School Fund Budget Fight

With the statement that the issue does not depend upon any of the principles involved in other recent State budget decisions, the California Supreme Court recently denied a writ of mandate to Will C. Wood, state superintendent of public instruction, to compel Ray Riley, state controller, to transfer certain school funds for the purpose of paying for general administrative supervision of the normal schools.

The amount involved was 1 per cent of the total appropriations in the budget bill for salaries in teachers' colleges and special schools, or \$21,877.54.

The net result of the decision means that there will be no money to pay the salaries of Deputy Director of Education A. Heron, and his assistants, whose duties were to supervise the state normal schools, and that as Director of Education ex-officio, Wood will have to perform these duties.

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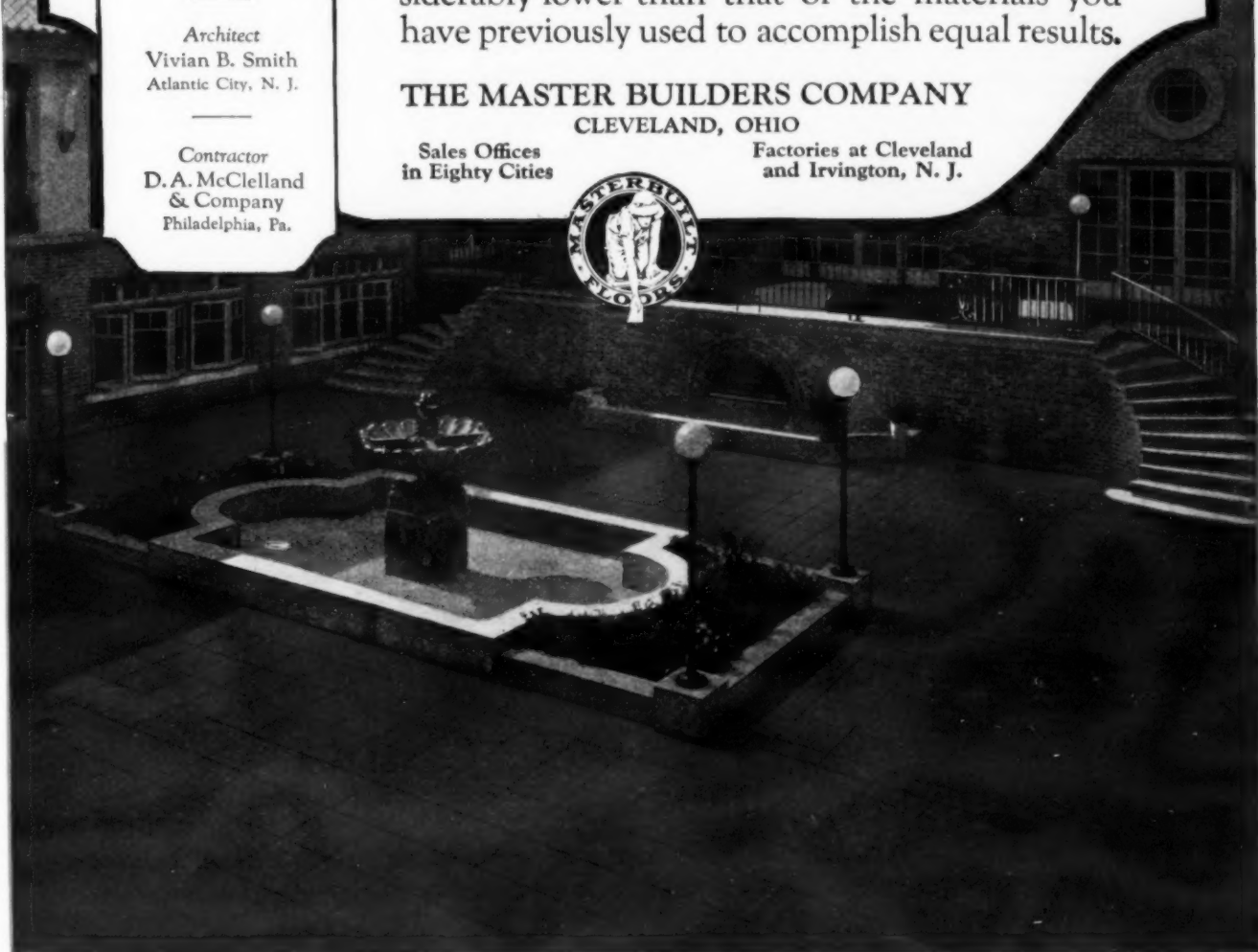
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RHODE ISLAND SCHOOL BOARDS HOLD FALL CONFERENCE

The fall conference of the Rhode Island Association of Public School Officials was held on Friday, November 23, in the lecture hall of the R. I. College of Education in Providence. More than a hundred school committee members and superintendents were in attendance.

President William W. Blodgett, chairman of the Pawtucket school committee, called the morning session to order. In his address of welcome Dr. Walter E. Ranger, Commissioner of Education, called attention to the fact that in Rhode Island members of school committees act not only for their local communities but also for their state. "You are all state officers just as much as are the members of our state legislature," said Commissioner Ranger. "Thus, you are serving not only your own municipality but also the state. The school committees in Rhode Island are legally and primarily responsible for what is going on in our schools. One of the reasons why this conference is being held today is that the function of the school committee may be better understood. As a matter of public interest it is important that the school committees in Rhode Island should be organized. Such conferences as this one tend to attract the best men and women in our communities to seek service on the school committees."

The principal address of the morning was delivered by Dr. Payson Smith, commissioner of education for Massachusetts. The title of Commissioner Smith's speech was "Responsibility in School Administration." In part, Dr. Smith spoke as follows: "Although administration in education is very important, the classroom teacher is more important. I congratulate you upon the fact that Rhode Island leads all of the States in the Union in the training and qualification of its teachers."

"In the field of school administration it is essential that we find out what our responsibilities are and then attend to these responsibilities. The state responsibility in education is four-fold. Its chief responsibility is to bring about an equalization of the educational opportunities. It is just and important that within a state there shall be an equalization of the cost of education. As yet no state has achieved all that is possible along this line.

"The second responsibility of the state is to see that there are established minimum standards of education below which no school shall be allowed to fall. In the third place the state must encourage certain educational projects that have not as yet been adopted throughout the entire state. A fourth responsibility of the state is the carrying forward directly of certain things because local consciousness has not been sufficiently developed to carry them forward. One of these matters is a wise, sane program for the training of teachers.

"A school committee should have complete charge of the educational program within the community. Unfortunately this condition rarely, if ever, exists. There has existed a theory that school board members are chosen for intellectual capacity but lack largely business ability.

"Within the committee the members should take the position similar to that of a board of directors of a bank or other business corporation. The superintendent of schools is their executive and the school board should expect him to be wholly responsible for the things entrusted to him. The superintendent should be responsible in every instance for the initiation of the appointment of every teacher in his school system. The course of study and all other educational professional activities should initiate with the superintendent.

"Our entire program rests upon the public and public opinion. Therefore, we must not forget the public for a single moment but realize that it is our duty to interpret public opinion and to lead it. It is not safe to introduce into a school system any educational policy until it is the policy of the community. We are acting for an enormous public enterprise. Let us not forget it."

Following Dr. Smith's inspiring address a luncheon was served in the college gymnasium. The afternoon program consisted of four discussions as follows:

1. Should a school board organize with sub-committees? Leader, Superintendent Herbert Lull, Newport.

2. Should a school board ever appoint teachers or other subordinate officials without

the nomination of the superintendent? Leader, Superintendent John L. Smith, Lincoln.

3. What is the best plan for determining the purchase of supplies and equipment? Leader, Superintendent I. O. Winslow, Providence.

4. Are we spending too much for Education? Leader, Superintendent John K. Fenner, Cranston.

AMONG BUSY SUPERINTENDENTS

—The fight existing between the school board of Syracuse, N. Y., and the mayor of that city has brought up the question of the status of Superintendent Percy M. Hughes. During the fall campaign Mrs. E. C. Robinson, president of the board took the stump against the mayor. Superintendent Hughes is said to be an avowed antagonist of the mayor. He is, however, practically assured of his reelection when his term expires next spring.

—Much publicity was given in the Michigan press to the preemptory dismissal of W. C. Buchanan, superintendent of schools, by the board of education at Lansing. A protest meeting attended by 500 citizens was held and fiery denunciation was expected. When the members of the board who faced the crowd had quietly stated that the superintendent had been lavish in expenditures and insubordinate to the board the meeting fizzled out. The members of the board consist of B. F. Kindig, president; S. E. Crowe, secretary; I. H. Wittemore, C. S. Robinson, Mrs. M. P. Chamberlain, and O. E. Reed.

—At the annual meeting of the Connecticut Association of Superintendents in February it is planned to ask each school superintendent to bring with him one member of his school board. The subject of discussion will be the School Board-selection size, tenure, organization, powers, relation to the superintendent; the Superintendent, selection, tenure, responsibilities, relation to school board. There will be a summing up from the point of view of best practice and theory by a state administrator. The officers of this association are John Lund, president, Wallingford; Herbert O. Clough, Rockville, vice-president; and Carl W. Maddocks, Deep River, secretary and treasurer.

THE WICHITA PUBLIC SCHOOLS

J. L. LELAND, SECRETARY
WICHITA, KANSAS.

October 27, 1923

Devoe & Raynolds Co., Inc.,
127 N. Market Street,
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Gentlemen:

With reference to the painting on the New Million Dollar High School here, I wish to advise that, Mr. L. A. McAllister, painting contractor, has the contract on this work, and that he is following the Architects specifications to the letter in using DEVOE'S materials throughout on this work. Consisting of DEVOE'S VELOUR FLAT WALL PAINT, on all the plastered wall work, DEVOE'S PENETRATING STAIN for all the wood work, finished with DEVOE'S PURE SHELLAC AND DEVOE'S WAX. He is also using DEVOE'S CONCRETE FLOOR PAINT on all the cement work.

We also wish to advise, that practically every new school building that has been erected in Wichita within the past five years, has been finished entirely with DEVOE'S products. We have also used a great deal of your materials on our repair work, all with the very best of success and this is especially true with your VELOUR FLAT WALL PAINT, and your MARBLE FLOOR VARNISH.

Your VELOUR FLAT WALL PAINT leaves a very nice flat velvet finish which we consider far better than a paint with a high gloss.

Naturally, we are very proud of our school buildings here, as we consider them among the best and most up to date school buildings in the country.

We should feel proud indeed to know that practically every one of them have been finished with DEVOE PAINT PRODUCTS.

With best wishes, we are,

Yours Respectfully,
THE WICHITA PUBLIC SCHOOLS

J. L. Leland
Secretary.

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Metal Lath thoroughly reinforces the plaster and prevents its cracking. Made entirely of steel, Truscon Steel Joist construction has no tendency to shrink, swell or warp, as occurs in wood construction. The saving in costs of redecoration and in expense for repairs is substantial. For school buildings, large and small, Truscon Steel Joists cost less than other fireproof constructions.

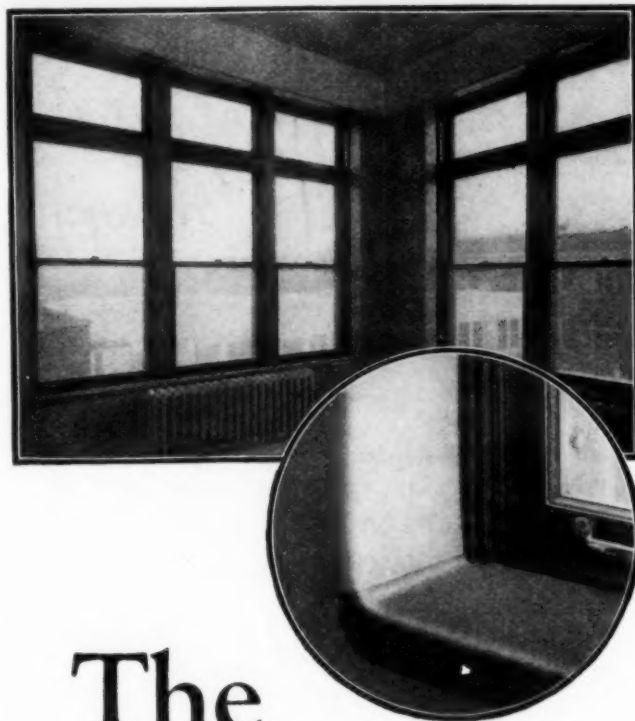
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ridor installation can be made without disturbing the school routine.

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SCHOOL BOARD NEWS

A FRACAS ON SCHOOL HOLIDAYS

When the board of education of Springfield, Mass., refused to close the schools on a certain Friday in order that the teachers might attend the meeting of the Hampton County Teachers' Association the latter organization passed resolutions of censure. These were somewhat bitterly framed and reflected on the sincerity of the board in promoting the cause of education.

The incident caused considerable commotion and prompted the editor of the Springfield Union to venture the following views on school holidays in general and the one in question in particular:

"The subject under discussion concerned the practise of the association of holding its conventions on Friday, which has necessitated the closing of the schools on that day in order to permit the teachers to attend. With a Saturday holiday at the disposal of the teachers every week and numerous other holidays throughout the school year, the taxpayers and the public in general are at a loss to find any sound reason why the work of all the public schools in the county should be suspended on Friday for the county convention. If holding it on some Saturday interferes with the holiday plans of the teachers for that particular day, it is only for one holiday out of a very large number, and the teachers could make the sacrifice without great hardship.

"In fact, there is no other calling or occupation in which holidays are so abundant. There is the summer vacation of ten weeks, two shorter vacations at holiday periods and, of course, every Saturday off, in addition to the legal holidays that happen to fall on school

days. Altogether the teachers have, counting Sundays, not fewer than 170 days on which they are not engaged in teaching, which leaves not more than 195 days of classroom work each year. In the circumstances the demand that the schools be closed another day to enable the teachers, without loss of pay, to attend their county convention, is wholly unreasonable.

"The school board of Springfield merely refuses to deprive the thousands of school children in this city of a day of school work to which they are entitled in order to save the county teachers from the hardship of devoting one of their numerous holidays to convention purposes. And if the out-of-town teachers doubt that public sentiment is almost unanimously behind the school board in this attitude, let them come to Springfield and inquire about it. Such injudicious talk as that indulged in Friday by some of the teachers attending the convention is more harmful to the profession than they seem to realize."

Among Boards of Education

—Schenectady, N. Y. The board is considering the formation of definite policies governing the scope and activities of the evening schools and medical department. A detailed report of the medical department, based on the state syllabus, is in preparation.

—Attorney general Crabbe of Ohio, in a decision, holds that boards of education are not liable for damages for injuries resulting to school children from accidents, where these are due to the negligence of school bus drivers. Boards of education are not authorized to carry liability insurance to protect themselves and the school children even though the law compels school children to be transported to school under certain conditions.

—The effort of J. E. Bale and others, of McCracken County, Ky., to force Supt. J. E. Coleman and the board of education to conduct a school at Littleville, has been overruled by the Court of Appeals of Frankfort. Inasmuch as the pupils in the Littleville school came from Paducah and part of McCracken County, the Court held that the board was within its rights in declining to open the building.

—Efforts of county school superintendents of Kentucky to retain their positions to the

detriment of public service in some instances by controlling the elections of county trustees at the November election were recently called to the attention of editors of the state by State Supt. George Colvin. Mr. Colvin pointed out that something more than the personal preference of a candidate should govern in the choice of a superintendent or school trustee. Five trustees, one from each educational division, are elected on a nonpartisan ballot at this election.

—Syracuse, N. Y. School janitors of the city have presented a petition to the board asking for an increase of fifteen per cent in salary. Upon agreement, janitors will be paid at the rate of \$1 an hour for night cleaning.

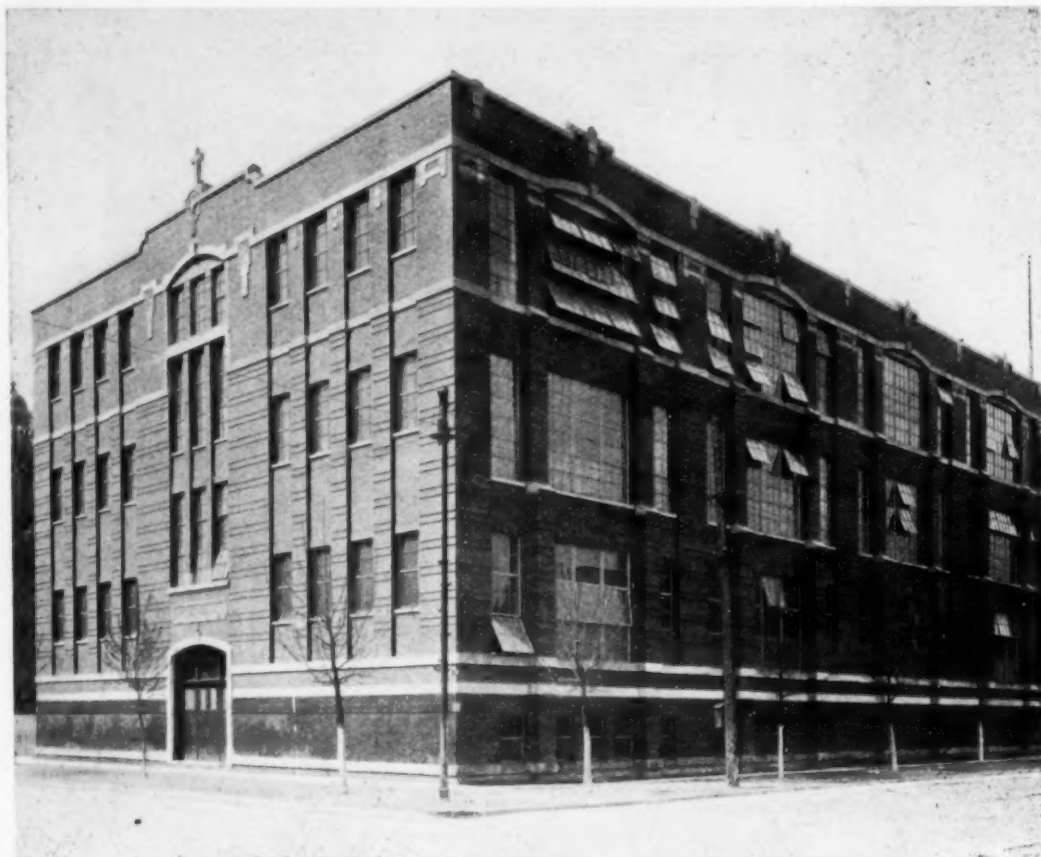
—Springfield, Ill. Protests have been lodged with the board against the practice of charging a rental fee for the use of the school buildings for other than school meetings. The representatives of the protesting organizations have intimated that they are willing to pay for janitor service for special occasions.

—The public schools of Stevens Point, Wis., in the future will not be used for public dances. The ruling bars dancing parties which in the past have been sponsored by the parent-teachers' association.

—Supt. Elwood T. Wyman of Warwick, R. I., has urged upon parents, pupils and principals of the schools the need of a safety campaign as a means of preventing injuries to children on their way to and from school. Older children should be encouraged to look after the little ones in the lower grades.

—Knoxville, Tenn. The school board has refused to rescind its action ordering teachers not to require the pupils to remove their shoes to be weighed. Miss Nellie Fitzgerald, a nutritional expert, who refused to accept the board's order, has presented her resignation. It is expected that the resignation will be accepted and that the work will possibly be discontinued.

—Chicago, Ill. To correct abuses due to the Lundin-Thompson school board, the business manager has been ordered to eliminate five titles now held by employees, to demote those employees, and to fill their places with men whose civil service standing entitles them to



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the salary attached to the positions. The positions affected are payroll clerk, pension record clerk, traveling auditor, head buyer, and contract clerk.

The president of the board has been asked to appoint a special committee to study various plans of school management. The committee is to consist of board members, educators of the school system, and a few capable outsiders. It is felt that an intensive study of school conditions is necessary as a means of formulating the best possible building plan.

—Chicago, Ill. Plans for a new type of school building to save the city several thousands of dollars, have just been completed by Mr. John C. Christensen, chief architect of the board. The type is known as the Chicago school plan and is held by builders to be the most progressive and economic step taken to reduce the cost of building.

The first structure to be erected under this plan will be the new grammar school at Montrose Ave. and Beacon St., funds for which have been voted by the board. All future schools will be erected on the Chicago plan.

—Mr. P. S. DuPont, of Wilmington, Del., who recently made a gift of a \$600,000 school to the city, received a collection of thirty letters from the public schools in which the pupils thanked him for his gift. Each pupil wrote a letter, and the best letter from each school was selected by the teachers or the pupils, to be sent to Mr. DuPont.

—Milwaukee, Wis. Steps have been taken by the board looking toward the reorganization of the school system. Mr. H. J. Otjen has appointed several committees to study problems ranging from administration of playgrounds to courses of study in the high schools. A division of the work of the central school administration into bureaus, as authorized by the board more than a year ago, has been ordered, and plans for a revision of the financial methods have been submitted. A few of the problems to be studied are:

A scientific basis for the distribution of supplies and equipment according to the pupil load.

A study of conditions arising from the shifting population.

—Utica, N. Y. The next budget of the board will include increases in salary for several members of the administrative staff. The increases will go to attendance officers, messengers, janitors, truck drivers, carpenters and painters, secretaries and clerks, and superintendent of buildings.

—Knoxville, Tenn. The new charter under which the commission form of government is superseded by the city manager plan, also provides that the former board of nine members shall be changed to one of five elected by the people. Under the new system the reorganized board of five members took charge on the first of October. The board consists of L. H. Spilman, president; Dr. H. H. Campbell, W. L. Ambrose, treasurer; Mrs. Belle Morris, secretary, and Mrs. Margaret Duggan.

—The Schuylkill County, Pa., school directors association elected for president E. W. Ruppert of Fremont; vice president, John Schroepe, Hegins and Elwood Schappel, Ruth Flownship; secretary, W. E. Updegrove, Porter Township; treasurer, W. O. Seitzinger, Gordon.

—The children of the New York City schools raised the sum of \$56,574.60 for the suffering Japanese which amount was turned over to Consul-General J. Ancha of Japan by President Ryan of the board of education.

—President C. M. Moderwell of the Chicago board of education recently said: "The school system of Chicago is similar to a large business corporation. It functions through three main heads of departments, viz., superintendent, business manager and attorney. The administration and educational policy is in the hands of the superintendent. The necessary business organization for supplying the needs of the schools and they are many and varied, comes under the business manager. The attorney advises on all legal matters; passes on leases of school property and advises with respect to everything which requires legal advice."

—At Waycross, Ga., a candidate for office at the autumn elections sought to advance his cause by attacking the board of education. The citizens resented the attack by defeating the ambitious candidate. The Herald of that city in defending the board said: "Any city

owes a debt of gratitude to men and women who have lived for many years in the city and during that time have been useful citizens, have contributed to the building of the community, have taken effective part in public movements. Such men and women are real community builders. The greater the number of such men and women in a city the faster is the growth of the city."

—Uniontown, Pa. The board has revised its rule governing non-resident students. Under the new rule non-resident students already in the school system may enter the high school. Under the former rule, all non-resident students were barred from the city high school.

—At Houston, Tex., during the past summer, the school system was removed from the control of the city government and placed in the hands of the local board of education. The change in management was effected through a legislative act providing for an election at which the members of the board were to be elected by the people. At present three members of the board are serving by virtue of election, and four members are holdovers by reason of the mayor's appointment. The change is to be completed in April, 1924, when the annual election of trustees takes place.

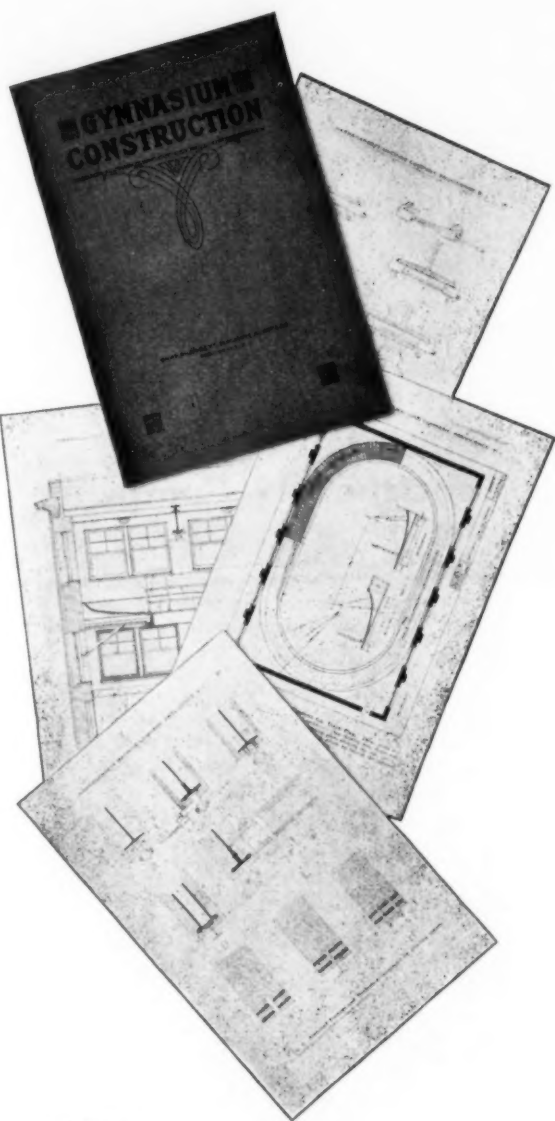
—Attorney F. W. Warner has ruled that two offices in a village may not be held by one person. A person may not serve at the same time as a member of the council and the school board. In the fall election at Morral, O., one man was chosen to serve on the council and also on the board of education. Another was elected village clerk and a member of the board. Under the law, the practice of holding two offices is not permitted in villages.

—Belleville, Ill. A new rule in effect at the junior high school has raised numerous protests from parents. Under the rule only pupils having permits may leave the school grounds during the lunch hour. These pupils are mainly those who live within an easy walking distance of the school; those who cannot go home for their lunch must bring a cold lunch with them or buy it at the cafeteria. The protests are directed against the short noon hour making it impracticable for a large number to go home, and also at the attempt to force the patronage of pupils at the cafeteria.

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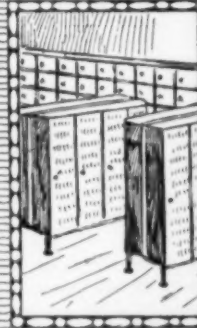
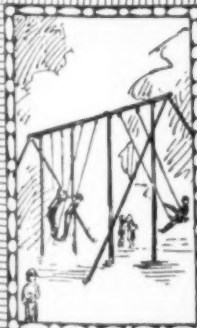


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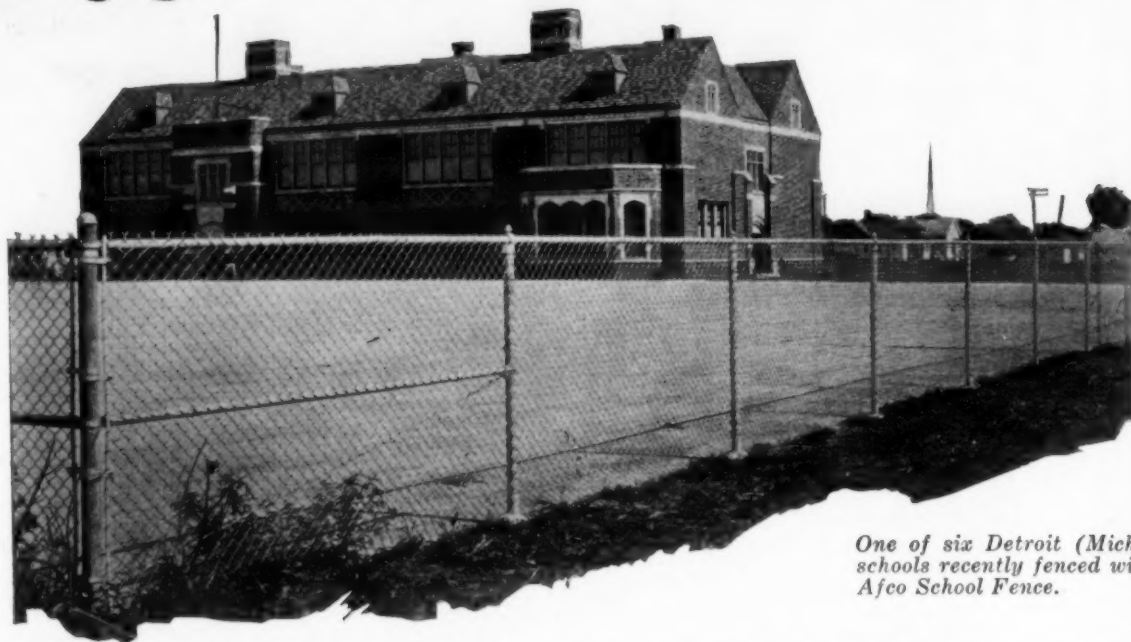
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SCHOOL LAW

School Lands and Funds

Funds created and set apart for the support and maintenance of the independent or white schools of an independent school district cannot be expended and used by the board of education for the support and maintenance of the separate or colored schools, after the funds set apart for that purpose have been exhausted.—Jones v. Board of Education of City of Muskogee, 217 P. 400, Okla.

Schools and School Districts

Where several districts are consolidated, the fiscal authority of the constituent districts is destroyed, and the debts of each become obligations of the consolidated district.—Walker v. Bennett, 118 S. E. 779, S. C.

Private persons have no standing to question the legality of proceedings to organize a rural high school district, nor to enjoin public officials from canvassing votes cast at an election held pursuant thereto; only the state, through duly authorized official counsel may do so.—Elting v. Clouston, 217 P. 295, Kans.

School District Government

The state has the power to provide in any way it chooses for the selection of the administrators of the school affairs in any district, town, or city.—McDonnell v. City of New Haven, 121 A. 824, Conn.

Under the Oklahoma complete statutes of 1921, §§ 10306, 10307, it is the duty of the department of high school inspection to define the official standard of excellence in all matters relating to the administration, course of study and instruction in the high schools of the state, and to accredit those schools in which the specified standards are maintained.—Hoffsommer v. Hayes, 217 P. 477, Okla.

The action of the department of high school inspection, in dropping a high school from the accredited list at the request of the board of education of such district maintaining such high school, and for the mere purpose of changing the status of such district from an independent to a common school district in order to enable it to consolidate with a common school district, is void.—Hoffsommer v. Hayes, 217 P. 477, Okla.

School District Property

Under the Texas constitution, art. 7, §3, and Vernon's annotated civil statutes supplement of 1922, arts. 2904 $\frac{1}{4}$ d, 2904 $\frac{1}{4}$ l, it is the duty of the state board of education and not the superintendent of schools to ascertain or determine who are contractors of textbooks and to specify such contracting company and the books to be used, and any specification by the superintendent without the approval of the board is a nullity.—American Book Co. v. Marrs, 253 S. W. 817, Tex.

Where several districts are consolidated, the fiscal authority of the constituent districts is destroyed, and the debts of each become obligations of the consolidated district, so that it is immaterial as respects the limitation of the South Carolina constitution, art. 10, §5, what the indebtedness of a constituent district is, as their debt becomes the debt of the consolidated district, and is payable out of its assets.—Walker v. Bennett, 118 S. E. 779, S. C.

A school district's bond issue election pursuant to notice stating the purpose of the bonds as that of "purchasing schoolhouse sites, erecting schoolhouses and furnishing the same and building additions to and repairing old buildings," is held not void because of doubleness in the submission to the voters, through resolution of school board recited that the high school building was inadequate and also that other school building was rapidly deteriorating and should be rebuilt, since neither the resolution nor the notice of election stated that the money was to be used both for the construction of new high school building and the repairing of other building; the recital in the resolution being merely for the purpose of showing the inadequacy of the existing facilities and the necessity of more buildings for school purposes.—Willis v. School District of Sedalia, 253 S. W. 741, Mo.

The school board's resolution reciting that the high school building was inadequate and that the other school building was rapidly deteriorating and should be rebuilt, and notice of bond issue election, stating the purpose of the bonds as that of "purchasing schoolhouse sites, erecting schoolhouse and furnishing the

same and building additions to and repairing old buildings," is held not to render the election void for doubleness in the submission of the question to the voters; the erection of a building and the repairing of the other building constituting a single proposition.—Willis v. Dist. of Sedalia, 253 S. W. 741, Mo.

Where a school election is advertised to be held "at the schoolhouse," and there are two schoolhouses in the district, both outside the corporate limits of a town, and neither school is definitely designated, and the election is held within the corporate limits of a town, without notice of the change, by posting or otherwise, an election so held will be void.—Wallace v. Excise Board of Bryan County, 216 P. 654, Okla.

Persons who voted for bond issue and levy of special tax in a school district could not attack the legality of the proceedings because the school district was not correctly named in some of the proceedings, because the election was held on the same day as an election for different purposes, or because of defects in published notice under Act No. 256 of 1910, §3.—Frazier v. Board of Directors of Public Schools of the Parish of Franklin, 97 So. 199, La.

Pupils

Chapter 61, Nebraska laws of 1921, appearing as section 6457-6462, of the complete statutes of 1922, prohibiting the teaching of any foreign language in any private, denominational, parochial, or public school is held unconstitutional.—Busboom v. State, 194 N. W. 734, Neb.

The law of Ohio provides that cities cannot obtain additional revenues except by a vote of sixty per cent of the voters. The school levy voted upon at Cincinnati fell short of the sixty per cent clause. Thereupon a taxpayer applied for an injunction restraining the county auditor and treasurer from turning over to the board of education. The court of appeals decided that a majority vote only was necessary on school questions. This decision was affirmed by the supreme court. At the school levy election held November, 1923, the vote again fell short by some 3,000 votes of the sixty per cent clause.

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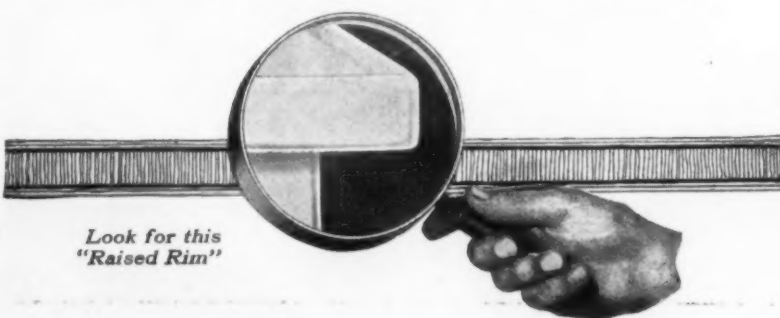
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RURAL SCHOOL ACCOUNTING AND BUDGETING

—George W. Earle, superintendent of schools at Preston, Kansas, has recently given the subject of financial accounting, as applied to the rural and consolidated schools of Kansas, considerable attention. His primary purpose is to ascertain whether the Strayer-Englehardt system is practical, or whether some other system ought to be devised.

His preliminary survey has not revealed the information desired. Out of 325 questionnaires mailed to principals and superintendents 135 were answered while 190 remained unanswered. Mr. Earle has, however, secured the assurance of a hundred superintendents and principals to test the Strayer-Englehardt system and aid in assembling the results. In pressing a thorough investigation of the subject and devising some uniform and efficient system Mr. Earle holds:

"No schoolman can be efficient as superintendent unless he does know the finances of his district. No rational recommendation involving the expenditure of a district's money can be made to a board of education by the superintendent without his knowing the status of its finances. A good system of accounting and a good budget will tell him at any time how much money has been appropriated for purpose, how much of the appropriation has been spent, and how much more he has to spend for that purpose.

"How many of our schools are one-sided in their financial policies, spending too much for high school and too little for elementary school, too much for an athletic coach and too little for a third grade teacher, too much for foreign languages and too little for English language, too much for coal and too little for janitor service, too much for insurance and too little for libraries, and so on? How many of us know at the beginning of the year how much the board of education plans to spend during the year for administration, supervision, teachers' salaries, health, or library books?

"The best way we may know is to add the expenditures for each of the items for the preceding year and estimate our needs for the coming year on the basis of last year's ex-

penditures. The superintendent who has a budget and keeps accurate account of his expenditures in a systematic way, can tell, for example, on February first how much he has spent for library books. He also knows how much more he can spend for that one item and come out at the end of the year with the finances of his district in a solvent condition.

"It has been the sad experience of many a superintendent in planning his work for the coming year to fail to take into consideration the board's provision for teachers' salaries and to find in the latter part of the term that the budget for that item was exhausted, thus making it necessary for the board to close the school abruptly before the year's work was completed.

"A well prepared budget will prevent such embarrassment in most cases. It is the opinion of our educational leaders in school administration that a more progressive step cannot be taken at the present time by a superintendent who is planning a constructive educational program in his community than that of adopting a scientific system of budgeting and accounting for expenditures in his system.

"Boards of education are as a rule willing to continue their methods of accounting as they have always kept their records in compliance with the standard forms sent them by higher officers and are sometimes somewhat reluctant towards any suggested changes until they are shown the value of better systems. They can see the value of knowing unit costs per pupil in average daily attendance for any department of the school when the importance of these items is presented to them in a clear convincing manner, and they are just as ready to adopt efficiency methods as are other school officials when the utility of these methods is proven."

THE SAINT LOUIS SCHOOL FINANCES

The report of the secretary and treasurer of the St. Louis, Mo., board of education is published as a separate document. Charles P. Mason, who is both secretary and treasurer, has provided a most illuminating document on the financial phases of the school system of that city.

He not only supplies the statistics, usually embodied in a school report, but exemplifies the receipts and disbursements in diagrams. We reproduce these with the figures that follow them.

Receipts—General Fund

Taxes—general	\$ 7,729,766.40
Taxes—merchants' and manufacturers'	1,054,459.68
Taxes—railroad	604,240.91
State School Fund	810,122.36
Rents	149,724.42
Tuition	22,707.00
Interest	219,270.27
Textbook Fund	87,896.90
Teachers' training course	63,029.10
Vocational training	33,741.97
Special schools	38,400.00
Sundries, sale of improvements, profit on bonds, transfer from School Bond Fund	49,883.49
Total	\$10,863,243.10

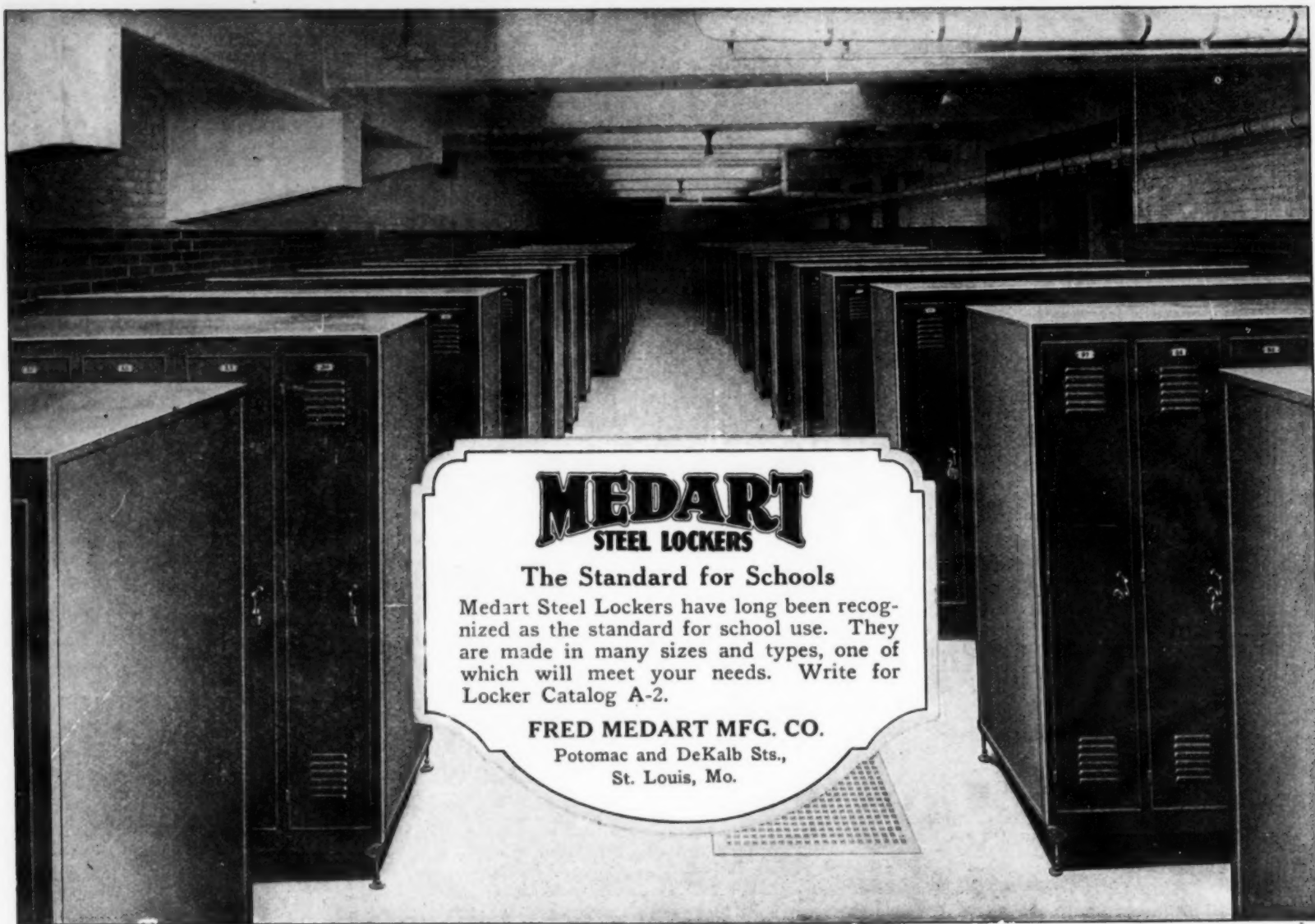
Expenditures—General Fund

Total population	795,304
Average daily attendance of pupils	93,532
	Per Pupil
Salaries of supervisors and teachers	\$6,299,744.90 \$67.35 \$ 7.92
Permanent outlays (land and buildings)	1,302,691.11 13.93 1.63
Textbooks, maintenance of schools, administration and all other expenses	1,887,140.80 20.18 2.37
Total	\$9,489,576.81 \$101.46 \$11.92

Mr. Mason also provides a table which shows the receipts for a period of fifty-three years. The regular income from taxation in 1870 was \$551,256.15. In 1923 this income was \$9,388,466.99. The school system received \$810,122.36 from the school fund, \$87,896.90 from foreign insurance corporation tax, and from miscellaneous sources \$576,756.85, thus bringing the total income for 1923 to \$10,863,243.10.

LAW AND LEGISLATION

By a vote of six to one Miss Alice T. Corrigan, a high school principal, was dismissed by the board of education of New Bedford, Conn. The dismissal had been contested in the courts with the result that the decision was in favor of the board. The court decided that the board was entirely within its authority if it resorted to removal of teachers and principals in the interest of the schools. Thereupon the school board reopened the case, gave the principal a hearing, and voted the dismissal.



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—A \$25,000 damage suit was filed at Bucyrus, Ohio, against R. G. Bittkofer, superintendent of Crawford County and Earl W. Crall, member of the county board of education by Davis French, president of the board. It is alleged that the defendants circulated literature to the effect that French had "for very good reasons" been partial to a book publishing house.

—R. E. Simms who held a three years' superintendency contract with the Onaway, Mich., board of education was dismissed after serving a few months. In the spring of 1922 a bitter factional fight for school board supremacy broke out which resulted in Simms' dismissal. He sued the board for damages and has now been awarded the sum of \$1,391.66 by the courts.

—The boards of education of Ohio have received a ruling from the attorney general that such bodies are not liable to damages for injuries or death suffered by children caused by negligence of drivers of school busses transporting children between their homes and school. He also ruled that school boards cannot legally carry liability insurance for the protection of pupils.

—In New Jersey the question of advertising for bids on transporting pupils to and from schools has come under consideration. Charles J. Strahan, assistant commissioner of education has given a decision to the effect that advertising for bids is not required, nor does the law require that contracts must go to the lowest bidder.

—A novel suit has been filed against Washington township, Ohio, by a taxpayer who claims that the township owes his boy a high school education. The township abandoned its high school without, however, the usual three-fourths vote required by law. The complainant sent his boy to an adjoining township and claims \$222 expended by him for transportation.

—Miss Genevieve Gabow, a teacher employed at Council Creek, Wis., dealt with a boy who persisted in employing bad language. After repeated caution she finally resorted to the use of soap and water in washing the boy's mouth.

Thereupon the father caused the arrest of the teacher on the charge of assault and battery. The court held that the charge was not well founded and acquitted the teacher.

—Every teacher who teaches in the state of Montana is liable for the monthly fee for the retirement fund, unless such teacher files a certificate of exemption in the office of the state treasurer. The attorney general has now ruled that in case a school board has neglected to deduct the fee from the teacher's salary, which teacher is liable to the pension fee, then the board is liable for the amount due the retirement fund.

CHATS DURING RECESS

Even a schoolmaster may get into the wrong pew. Superintendent Frank Cody was booked to speak before a crowd of college men at the Detroit Board of Commerce rooms. He was ushered into another dining room where a crowd of real estate men were feasting. He feasted with them, but the surroundings didn't look right to him. When he learned that the chair he occupied was intended for another man he woke up. In the meantime the college crowd was patiently waiting for the distinguished educator.

—Strange things happen even in the field of school administration. The Detroit board of education recently secured some property by condemnation for school purposes, and behold! it found itself the owner of a near-beer sa'oon. The board has given assurance, however, that the school building project will not be delayed.

—When an Illinois educator defended individualistic as against collective instruction in the school the editor of the Urbana (Ill.) Daily Courier became wrathful and spoke up as follows: "If this notion is correct then our entire public school system is a failure, and the thing to do is to sell our school buildings for old brick, marry off the good looking schoolmarms, and set the rest to work at some other useful occupations, and save the money we are now spending for school taxes."

—We felt it in our bones that something still remained unexplained. The philosopher of the Ohio Educational Monthly now tells us that:

"One of the big tasks of the teacher is to dissipate cephalic nebulosity."

—Dorothy Scholze, a school teacher at Orient Point, L. I., smoked cigarettes, wore knickerbockers and went automobiling with one of her boy students. When Lyle Tuthill, the fisherman who presides over the board, told her she was a flapper and did not measure up to his ideals of a teacher, Dorothy said: "There should be some protection of the personalities of rural school teachers. I am contending for a principle." And then Tuthill also contended, and Dorothy lost her job.

—Gee, but that was some sneeze! A thousand teachers attending the Schuylkill, Pa., county institute sneezed in unison in response to Miss Theresa Ransdill, health crusade executive of New York who drilled the assemblage in a test to avoid the spread of tuberculosis.

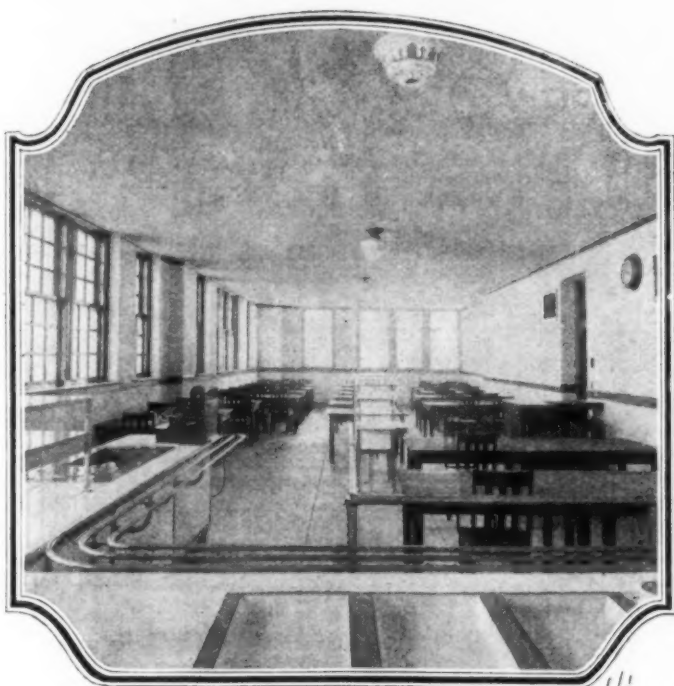
—After everybody in Iowa was agreed that the consolidated school was a good thing a woman professor from New York named Latham came out there to say she didn't like them. Here is the way she records her displeasure: "The only thing that looks out of place in a good many of the communities I have visited are the great big consolidated schools, of splendid brick or stone—fine buildings, but hardly seeming like a part of the community, hardly like the natural outgrowth of a popular urge for better educational facilities."

—"Motion pictures are not merely purveyors of amusement but also educators of parents and children," said Superintendent William L. Ettinger of New York City in addressing members of the motion picture industry: "It is no excuse for any one of you to say that you give the public what the public demands. It is for you so to mold, so to direct the appreciation of the public for whatever is moral, whatever is educational, whatever is patriotic, whatever is truly American; that whatever is immoral, whatever is cheap and tawdry shall disappear from our motion picture theaters forever."

—A reception was tendered to Dr. W. H. Holmes, superintendent of schools at Mount Vernon, N. Y., on the completion of ten years of service, by the teachers and citizens.

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Pix Cafeteria Equipment is recognized by School Boards everywhere as being of that high standard of quality that proves in the long run to be the greatest economy. Below is illustrated one of our most recent installations.



WHETHER it be large or small, every new school building you are now planning and every old building that is to be remodeled should include a cafeteria. One of the chief functions of the school is to watch over the physical as well as the mental welfare of the children. The school cafeteria is absolutely essential in this regard due to the fact that it materially lessens malnutrition by making available warm nourishing food instead of cold, unpalatable box lunches. The children become accustomed to eating the kinds of food that are most beneficial to them and as a result are more alert and responsive in the classroom. It is to your advantage to let our engineers explain to you or your architects the advantages of the school cafeteria and Pix Cafeteria Equipment. Send for our School Cafeteria Book Y93.

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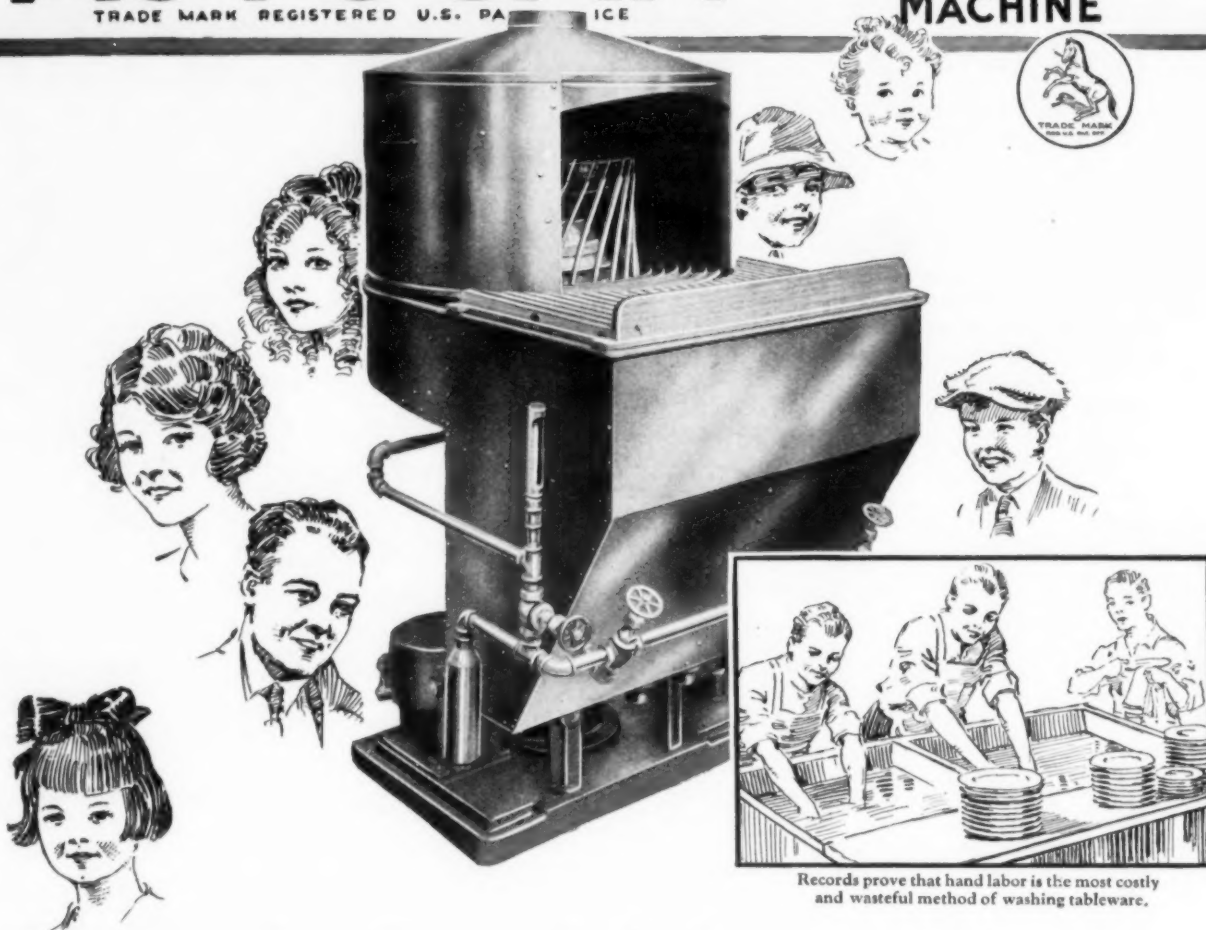


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These are facts, based on actual Autosan installations in every type of cafeteria. Similar records can be made in your establishment.

Let us send you literature describing the various Autosan models so that you may see which one best fits your kitchen and works for you most economically. Folder S.A.-34 is yours for the asking.

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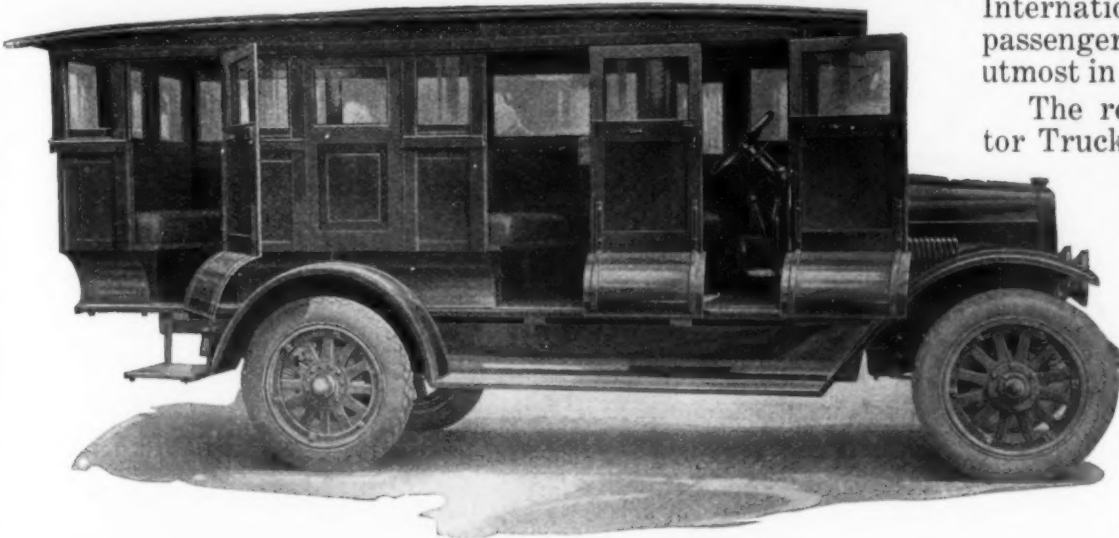
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rigidly built, with airplane plywood panels that are light and strong. This bus can be furnished in cross-seat or side-seat style. For dependable, economical transportation, this model is unbeatable.

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PERSONAL NEWS OF SUPERINTENDENTS

—Supt. W. H. Bishop of Stillwater, Okla., is serving his fifth year as city superintendent.

—Dr. Andrew W. Edson, formerly associate superintendent of schools of New York City, now residing at Shrewsbury, Mass., has been suffering for five months past from spinal trouble. Dr. Edson has been obliged to cancel all engagements for institute and college work.

—Dr. John Huston Finley, formerly commissioner of education for New York State, has accepted the presidency of the National Child Welfare Association of New York. As president of the College of the City of New York, as commissioner of education, and later as associate editor of the New York Times, Dr. Finley has played a significant part in the educational and literary fields. The National Child Welfare Association is well known in educational circles as the earliest and most extensive producer of educational posters on all phases of child welfare, physical, mental and moral. Dr. Finley's connection with the association will mean the broadening and deepening of the work carried on by this organization.

—Mr. Louis D. Deyo, supervising principal of schools at Bound Brook, N. J., has become superintendent of the Somerset County schools, succeeding H. C. Krebs. Mr. Deyo assumed his new duties on December first.

—Supt. J. W. Cantwell of Wichita Falls, Tex., will complete his first year of service in February. He was formerly president of the Oklahoma A. and M. College at Stillwater.

—Mr. S. H. Rider has become principal of the senior high school and junior college at Wichita Falls, Tex.

—Supt. Charles A. Krout of Tiffin, O., was recently presented with a life membership in the National Education Association as a token of the esteem in which he is held by the teachers. Mr. Krout is completing his 24th year as superintendent of the Tiffin schools.

—Mr. Willis M. Chambers of Newkirk, Okla., has been elected superintendent of schools at Perry, at a salary of \$3,000.

—Supt. W. E. Miller of Knoxville, Tenn., is serving his thirteenth consecutive year as head of the city schools. During this period the enrollment has grown from 6,500 to 19,500, and the expenditures from \$125,000 to \$820,000. The further expansion of school activities will include the carrying out of the building program, the employment of a vocational director, the establishment of a department of scientific child study, and the opening of rooms for the varied needs of children.

—Mr. F. J. Penley has been appointed supervisor of schools at Winsted, Conn. Mr. Penley will continue to have in his charge the schools in the towns of New Hartford, Barkhamsted, Hartland and Colebrook.

—OHIO:—Carl D. Washburn has been made principal of the Eleventh Avenue junior high school, and Velorus Martz becomes principal of the Crestview junior high school, Columbus. Harry Wyman principal at Wellston; Joseph W. Fichter elected superintendent of Butler County; Superintendent E. W. Howey is completing his eleventh year at Defiance; W. W. Heater has gone from a county superintendency to the superintendency at McClure; J. J. Phillips re-elected superintendent for four year term at Lancaster; Superintendent W. R. Hoover of Marysville was elected president of the Union County Association; Principal G. A. Bowman of Zanesville was elected superintendent at Chillicothe; Principal O. H. Lowry was promoted to the superintendency at Painesville; C. A. Hudson becomes superintendent of Metamora; F. D. Ring is the new superintendent of Jefferson County; S. H. Babcock was re-elected superintendent of Medina County for a term of three years; Dr. J. A. Shawan, one of the former big school men of Ohio, lives on a farm at De Graff; J. W. Instey was elected superintendent of Hancock County; Principal F. H. Harris was promoted to the superintendency at Greenfield; J. O. Eagleson re-elected superintendent at Bellefontaine; John W. Moore elected superintendent at East Palestine; J. S. Mason elected superintendent at Marion.

—The new district school superintendents of New York City are George L. Hentz, Cornelius D. Fleming and Miss Lucille Nicol at a salary of \$6,000 each.

—Mr. H. C. Miller of Spencer, N. C., has succeeded F. L. Ashley at Washington. Mr. Ashley has gone to Hamlet, N. C.

—T. J. Barrett who was out of school work for some time has entered the fold again as superintendent of the Talbotton, Ga., schools.

—Supt. D. M. Laws is serving his fourth year at Erwin, Tenn. During his incumbency, the schools have had a remarkable growth, the playgrounds have been equipped with outdoor gymnasiums at a cost of \$2,000, motion pictures have been introduced, a piano installed in one of the schools, and about \$300 worth of books added to the library. The schools have the active cooperation of the parent-teacher association and the local kiwanis club.

—Supt. A. W. Elliott of the Mt. Vernon, O., schools has been made a member of the committee on school finance which will report at a convention of Ohio public school superintendents next April.

—Supt. George O. Clough of Tyler, Tex., has become a candidate for the presidency of the Texas Teachers' Association.

—Mr. James J. Quinn of Montague, Mass., has accepted the superintendency at Winchester.

—Mr. C. E. Hulton, superintendent of schools at Sturgeon Bay, Wis., has been awarded back salary of \$4,225 by the Circuit Court of Bayfield County. While superintendent at Washburn, Wis., Mr. Hulton was given a three-year contract at a salary of \$3,600 a year. The old board which elected him later resigned, and the new board broke the contract, refusing to pay the superintendent for the balance of his three-year term.

—Mr. Walter P. Bland, superintendent of schools at Globe, Ariz., died on October 28th. The funeral ser-

vice took place in the Globe high school auditorium, after which the remains were taken to Newcastle, Ind., where interment was made. Mr. Bland had been at Globe since 1914, going there as principal.

—Mr. R. B. Ambrose, principal of the high school at Belleville, Kans., has become superintendent of schools. He succeeds the late M. G. Kirkpatrick.

—Mr. B. Frank Whitford, formerly principal of two of the local grade schools, has been appointed assistant superintendent of schools, at Stamford, Conn.

—Mr. Sloane M. Wallace has been elected superintendent of schools at West Waterloo, Iowa, to succeed John C. McGlade.

—Sam A. Baker, former state superintendent of Missouri, has announced his candidacy for the office of governor.

—The board of superintendents of New York City has elected Miss Lucille Nicol as district superintendent of schools.

—Mr. Leonard Young, who assumed the superintendency of the Duluth, Minn., schools last November, is the ninth man to hold the position since 1873 and the fourth to hold it since the resignation of R. E. Denfeld. During this period the salary attached to the office has been raised from \$1,000 in 1873 to \$7,500 in 1923, an increase of \$5,000.

—Mr. I. M. Allen, formerly superintendent of schools at Springfield, Ill., is one of fourteen educators engaged in a survey of the school system at Springfield, Mass. The survey involves a thorough-going investigation and appraisal of every part of the school system, and the men engaged in the work are school executives of experience who are pursuing special work at Teachers College, Columbia University. The survey is under the direction of Dr. G. D. Strayer and Dr. N. L. Engelhardt of Teachers College.

Among the phases of work covered by the survey are building conditions, health of children, fire protection, playground provisions, medical and dental inspections, walking distance of buildings, zoning plans, organization and administration of the system, accounting procedure, cost of operating the schools, and progress of the pupils in the common subjects as compared with the standards obtaining in other cities.

—Mr. William H. Bachrach, supervisor of commercial subjects in high schools at Chicago, has been recommended as president of the Continuation School, to succeed the late Edwin Cooley.

Mr. William H. Campbell has been named a candidate for a district superintendency.

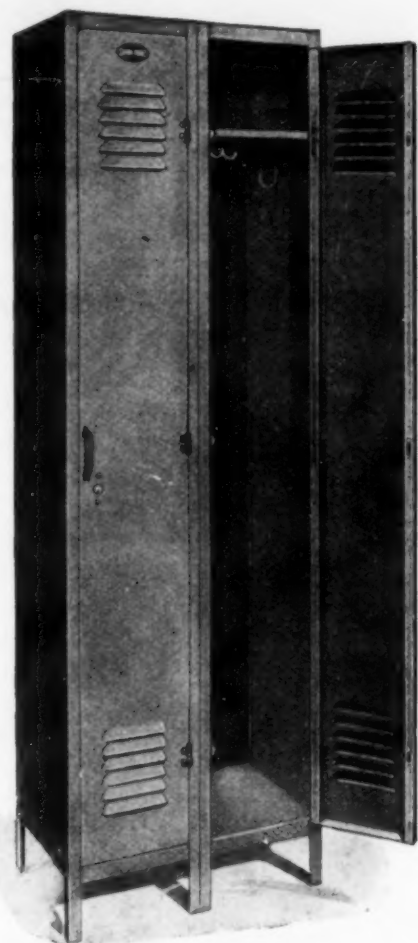
—At the November meeting of the school board of Lebanon, Pa., the salary of Supt. E. M. Balabaugh was raised from \$4,000 to \$4,600. Mr. Balabaugh is serving his tenth year as head of the schools.

—Supt. J. F. Arendell of Miami, Okla., is completing his second year of service in Miami.

ASSOCIATION ELECTIONS

—C. S. Marburger was elected president of the Schuylkill county branch of the Pennsylvania educational association.

—Leroy E. Williams, superintendent of schools at Rumford, Me., was elected president of the Maine Teachers' Association. The Rumford Times is commenting on the distinction says: "Roy," as he is popularly known, is just a real man, fond of hunting and camping and of the outdoor life. He is widely



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known and popular throughout the state and has considerable influence in educational circles."

—Charles O. Williams superintendent of Wayne County since 1910 has resigned his position to become the permanent secretary-treasurer of the Indiana State Teachers' Association. His headquarters will be at Indianapolis.

—J. O. Marbury of Rockford, Ill., was elected president of the Northwestern division of the Illinois Teachers' Association.

—R. E. Williams was elected full time secretary of the Kentucky Educational Association with headquarters in the Starks building, Louisville.

—The Hampton County, Mass. teachers' association elected the following officers: President, Esther M. Greeley, Holyoke; vice-president, Wellington Hodgkins, Springfield; treasurer, Mary Allaire, Chicopee; secretary William A. Cowing, West Springfield.

NEWS OF SCHOOL OFFICIALS

—Altoona, Pa. The voters have reelected to membership for six years, Mr. William P. Eberle, president of the board, Mr. Samuel Bowen and Joseph McKerihan.

—Wooster, O. Mr. L. A. Woodard has been reelected a member of the board for four years. The other members are Mr. J. J. Kelster and Mr. J. W. Hooke.

—Phoenixville, Pa. At the last November election, a woman, Miss Ella V. Waitneight, was elected for the first time to serve on the school board. Since December, two of the seven members have been women, Mr. Clarence Slonaker, president of the board, has been reelected a member for a term of six years, Mrs. Henry D. Rankin, president of the Phoenixville Women's Club is the second woman member.

—The board of education at Muskogee, Okla., consists of four members, elected biennially in groups of two, for four-year terms. The present members are Dr. M. K. Thompson, Mr. R. M. Fink, Mr. John W. Porter, Mr. H. P. Culp, and Mr. E. D. Cave.

—Mr. J. C. Heebsh and Mr. E. A. Hasemeyer have been reelected members of the board at Tiffin, O.

—The board of education at Perry, Okla., has been reorganized with the election of two new members, Dr. O. W. Boyer and Mr. H. C. Jackson.

—Mr. C. H. Dunford, for 21 years clerk of the board of education at Marietta, O., died on November 15th, after a record of fine service for the city.

Captain Julius I. Peyser was appointed a member of the board of education of Washington, D. C., by the district supreme court to succeed Daniel J. Callahan, resigned.

—Colonel John H. Wickersham was elected president of the Lancaster, Pa., board of education. Nevila C. Schaeffer was elected vice-president; W. J. Coulter, secretary, and John H. Hetrick, solicitor.

—Several Pennsylvania towns elected school board officers as follows: Duquesne—President, W. C. Libenood; vice president, C. F. McDonald; solicitor, W. M. Ewing; Homestead—President, Dr. W. C. Lawson; vice president, H. M. Covert; West Homestead—President, Miss Sarah J. Calhoun; vice president, Joseph Truxal; Munhall—President, E. G. Crozier; vice president, C. A. Geogel; Midlin township—President, Dr. E. J. Jones; vice president, George A. Taylor; solicitor, H. A. Jones.

—The school board at Tyrone, Pa., reorganized on December 3rd, with the following members:

President, H. W. Mattern; vice-president, E. B. Dawson; secretary, B. E. Woodring; treasurer, John S. Ginter; members, Dr. W. E. Lotz, Dr. F. C. Farrand, R. A. Miller and W. C. Van Scoyoc.

—Miss Helen Crane, clerk of the board at East Lansing, Mich., has resigned. Miss Mary Rozema succeeds Miss Crane.

—At the annual meeting of the board of education of Lebanon, Pa., held on December 3rd, Mr. B. F. Patschke was reelected president for a third consecutive term. Mr. P. N. Hershey was reelected vice-president, and Mr. C. M. Erdman was elected to take the place of Mr. W. F. Spayd retired.

BUILDING AND FINANCE

—Washington, N. C. Bonds in the amount of \$300,000 have been voted for the erection of two buildings, one for white and one for colored schools, and work has started on the buildings. G. L. Preacher, Raleigh, is the architect.

—At the recent November election, the voters at Youngstown, O., approved a three-mill tax levy for school purposes. This will produce on a tax duplicate of over \$380,000 approximately \$1,000,000. The levy which runs for four years, will provide approximately \$800,000 each year for new buildings.

—Stillwater, Okla., has expended \$110,000 for new buildings during 1923. One four-room annex and one four-room elementary school have been completed.

—Pekin, Ill. A six-room elementary school, with gymnasium and auditorium, is in process of completion. The building which will be occupied February first, was erected at a cost of \$85,000.

—The contract has been awarded for the erection of a \$50,000 building for the Shadyland School District at Mission, Tex. The building is provided with \$20,000 worth of equipment.

—The Rotary club of Mission, Tex., has a committee of three men, who visit the schools once each week. These men report back to the club the progress found, conditions noted, and needs of the schools. The plan has been found successful in keeping business and professional men of the town informed on all school matters.

—Marion, O. The schools will lack about \$34,000 in meeting operating expenses this year, according to estimates of the superintendent and other officials. Under a new state law, schools may not longer operate on borrowed funds but must run entirely on funds received from taxation. Based on a new increased tax valuation of the school district, a levy of about .87 of a mill will be necessary to yield the \$34,000.

—The schools of Erwin, Tenn., have more than doubled the scholastic population in the last three years. Six new schoolrooms have been added at the Elm Street School, and ten at the Lane Street School. A total of nine hundred pupils are enrolled in the schools.

—Wellston, O. A high school costing \$160,000 will be completed in March, 1924.

—Del Rio, Tex. A building program involving \$120,000 for a high school plant, has recently been completed. The high school plant now comprises three buildings. The buildings which are of the Spanish renaissance type of architecture, are located on an eight-acre plot of ground and include not only the building site but a large athletic field.

The school reports a very rapid growth in enrollment and inability to entirely overcome crowded conditions despite the erection of new buildings.

—Omaha, Neb. One of the most complete high school plants in the country, the Omaha Technical High School, has been occupied by almost 3,200 pupils. The building which is not entirely completed, will be formally dedicated in 1924. Some of the unique features of the building are a cafeteria, two large gymnasiums, a household arts department, a library and reading room, open-air roof playground for exercises and callisthenics. The building has been constructed without any waste space and cost slightly over three million dollars. The North High School, in process of construction, will accommodate 1,200 pupils and will cost \$750,000. In the last six years the city has issued \$6,000,000 in bonds for the erection of school buildings.

—R. M. Millican, commissioner of school buildings for the board of education of St. Louis, Mo., has issued his report for 1922-23 which shows that the Calvin M. Woodward school just completed was contracted for at a cost of \$338,737. Three other schools, the Theodore Roosevelt high school costing \$1,459,202, the Cyrus P. Walbridge school costing \$315,835, and the Edward H. Long school costing \$344,040, are still in course of construction.

—A committee composed of members of the Concord, N. H., school board and citizens employed the services of H. D. A. Ganteaune of the firm of Monks and Johnson, architects and engineers to make a survey with a view of determining upon a school building program.

—With a ten per cent cut in teachers' salaries and a possible nine months' term the deficit of the Little Rock, Arkansas, school system is \$77,000.

—The new school at Oak Park, Ill., was named the William H. Hatch school in honor of the man who had served the city as superintendent for twenty-five years. He retired sometime ago and is now 78 years old and living at Rockford, Minn. He honored the dedicatory ceremonies with his presence.

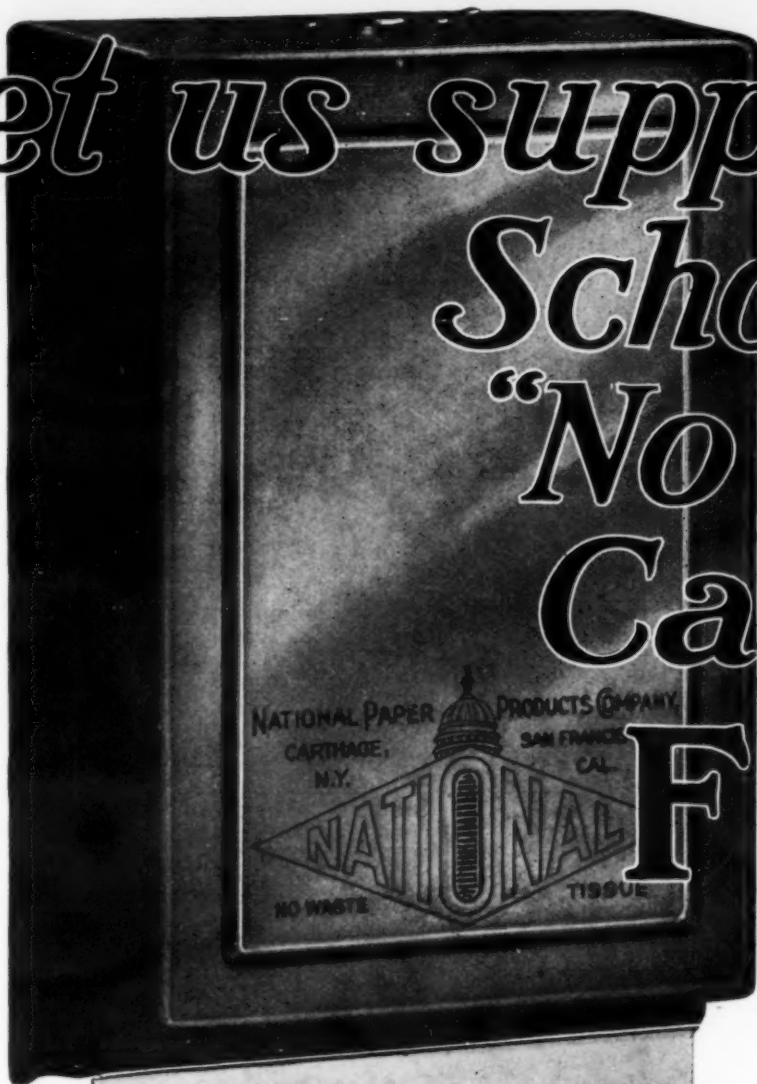
—El Paso, Tex. The superintendent has recommended that a bond election be called to vote on a bond issue of \$945,000. The proposal has the approval of the local press and of a good many of the citizens.

—On November 6th East Youngstown, O., voted favorably on a \$350,000 bond issue for the erection of a high school. A fourteen-acre site near the center of the city has been obtained as a site for the building. The construction work will start early in the spring.

—As a result of a survey of the school plant made last year, the citizens of St. Joseph, Mo., were asked to approve a bond issue of \$1,000,000. An intensive campaign was waged to acquaint citizens with the conditions of the schools. The bond issue, however, failed.

—Chicago, Ill. The voters recently gave an enormous majority to the proposition for a tax increase for new schools and more seats for the present pupils. At the same time the proposal to establish and maintain a zoo went down to defeat. The school children's parades and the publicity given by the newspapers and the children in the schools proved a big factor in winning the election.

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Cabinets. These cabinets finished in Olive, White or Nickel, are leased without charge to schools. All we ask is that "No-Waste" Tissue be used so long as we continue to supply it at fair competitive prices.

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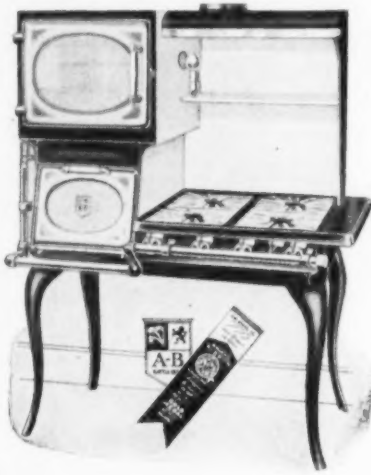
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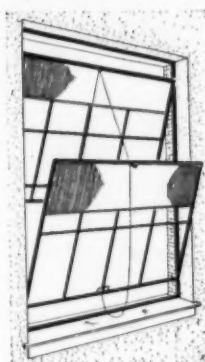
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TEACHERS AND ADMINISTRATION

BRIDGEPORT COMBATING TEACHER CONTROL

The city of Bridgeport, Conn., has just emerged from a battle in which it was sought to bring the school interests under direct municipal control. For six months a charter revision commission was at work. The commission consisted of three business men appointed by the mayor to serve with a committee of the common council.

The plan evolved by the charter commission, among other things, provided that the board of education be appointed by the mayor and that the teachers be placed under the local civic service.

The school people being desirous of securing light on the subject inquired of the National Civil Service Reform League as to the experience of that body in thus making the school system a part of the local municipal machinery.

The secretary of that body wrote: "I believe it is highly desirable, both from a point of view of good administration and economy, to place the school teachers in Bridgeport under the jurisdiction of the Civil Service Commission. There is no reason for treating the school employees differently than other civil employees, and while it is true that the examinations for teacher may be wholly different than those for other positions in the city service, the examinations of teachers can nevertheless be effectively conducted by an examiner in charge of such examinations in the examining division of the commission. The appointment of teachers without competitive examination by a non-partisan and expert examining board invariably leads to personal and political favoritism."

The citizenship interested in the schools

were not satisfied with this statement. In fact, it became clear to them that the expert organization secretary lacked in a grasp of the subject. He failed to realize that a school system is a state and not a local institution and that the civil service idea is not applicable to the teaching profession which is measured and tested by educational experts and not by political civil service bodies.

Evidently the community shared the judgment of those in charge of the schools. The charter revision was defeated by a four to one vote.

TEACHERS AND ADMINISTRATION

—President L. D. Coffman of the University of Minnesota denies the statement attributed him by Colliers' Weekly to the effect that 300,000 teachers in the United States have never had training above the seventh grade. He claims to have stated that 30,000 teachers have never had training beyond the grades.

—Teachers of Westville, Conn., have been put on the same basis as the New Haven teachers that is, they will be accorded full retirement pension rights and also tenure of office advantages as well as salaries. Miss Olive Unger, former president of the Westville Teachers' League, appeared before the Board of Education in October and requested that this be done, inasmuch as Westville teachers at the time of consolidation became New Haven teachers in January, 1921. Salaries of janitors in some of the New Haven schools have been raised from \$1,300 to \$1,450 a year and the minimum salary fixed at \$1,250.

—A Parents and Teachers' Association has been formed in Berlin, Conn., to which the name of Emma Hart Willard has been given. Mrs. Willard was born in this town and the D. A. R. of the place also bears her name. Mr. B. R. Showalter, superintendent of schools, of the town of Berlin, claims that Mrs. Willard was the first woman school superintendent in the United States, a conclusion he has drawn after research work in Columbia university. During the years 1814-1919 she acted as superintendent of the Middlebury schools, Vermont.

—In speaking of the Northeastern Ohio Teachers' Association convention a newspaper

representative said: "I have attended conventions of all sorts—grocers' conventions, ice cream men's conventions, garment workers' conventions, women's club conventions, doctors' conventions, coal miners' conventions—all kinds. And in none of these have I seen much else than close attention to the speakers and keen, steady interest in the topics discussed. In none of them have I observed the disorder and discourtesy that too often mark teachers' conventions." In commenting on this criticism the Cleveland School Topic adds: "A considerable number of the teachers in the audience whispered, giggled, ate candy and otherwise disturbed the majority who were attending the meeting to receive professional help and inspiration."

—"Harding, Wilson, Taft were teachers" says William H. Allen in Public Service," as were Hoover and Hughes, Governors Cox of Ohio, Nathan Miller of New York and Goodrich of Indiana, Senator Ferris of Michigan, etc."

—The evening school teachers of Chicago, 1,000 in number have asked for a raise from \$4.00 to \$6.50 per evening for elementary teachers and from \$5.00 to \$7.50 for high school teachers. The assistant high school principals have asked for an increase from \$4,200 to \$4,800 a year.

—"The real source of the faults in our educational system is the great number of half-baked, half-educated teachers who are merely in the profession to make their living" said Miss Jean Hamilton, dean of women, of the University of Michigan. "Personality counts for more in a teacher than any other one thing. Unluckily, personality is not tested in prospective teachers. Without personality, which is mostly composed of a sympathetic attitude, a teacher will fail to prove an efficient instructor. When a teacher lacks sympathy and a desire to teach merely for the love of it and its benefits, then it is time that he or she quits teaching. It's that missionary spirit within an educator that prompts him to sacrifice money for the purpose that he is fulfilling in the world."

—The Indianapolis, Ind., board of education has a rule providing that teachers be automa-

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Bulletin S-9 contains some very valuable information for school boards—ask for it—without obligation.

THE AIR CONDITIONING AND ENGINEERING CO.

Air Conditioning and Ventilation Apparatus

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tically retired after forty-five years of service. The option to continue the teacher for an additional five years is left to the superintendent.

TEACHERS' SALARIES

The Racine Salary Schedule

—The school board at Racine, Wis., has adopted a salary schedule for the entire teaching and supervisory staff. The schedule is as follows:

A. Salaries of Elementary Grade Teachers and Kindergarten Directors: Teachers with no experience will be given a salary of \$1,000; those with one year of experience, \$1,075; those with two years' experience, \$1,150; those with three years' experience, \$1,225; those with four years' experience, \$1,300; those with five years' experience, \$1,375; those with six years' experience, \$1,450; those with seven years' experience, \$1,525; those with eight years' experience, \$1,600; those with nine years' experience, \$1,675; those with ten years' experience, \$1,750 (maximum).

The present system of rating will be continued. Teachers receiving a rating of E (excellent) will receive an annual increase of \$85; those with a rating of G (good), will receive an annual increase of \$75; those with a rating of F (fair) will not receive an annual increase; those with a rating of P (poor) will not be reappointed, and those with F (fair) two years in succession will not be reappointed.

Teachers who reach the maximum must maintain at least a G rating to be reappointed.

In giving credit for experience, full credit will be given for experience in Racine or elsewhere, in regular graded schools, or in kindergartens. One-half credit will be given for rural school experience. However, in no case will the total credit given for experience outside the public schools of Racine, exceed five years.

B. Kindergarten Assistants: Kindergarten assistants with no experience will be given \$925; those with one year of experience, \$1,000; those with two years of experience, \$1,075; those with three years' experience, \$1,150; those with four years' experience, \$1,225; those with five years' experience, \$1,300, and those with six years' experience, \$1,375 (maximum).

C. Junior and Senior High School Teachers: The schedule for these teachers is for ten years

and covers two, three and four years' training. It provides for the following:

Years experience	Two Years training	Three Years training	Four Years training
0	\$1,100	\$1,200	\$1,250
1	1,175	1,275	1,335
2	1,250	1,350	1,420
3	1,325	1,425	1,505
4	1,400	1,500	1,590
5	1,475	1,575	1,675
6	1,550	1,650	1,760
7	1,625	1,725	1,845
8	1,700	1,800	1,930
10	1,850	1,950	2,100

For unmarried men teachers the salary will be \$220 higher than the above schedule, and for married men \$500 higher than the schedule.

The present system of rating teachers on their efficiency will be continued.

(a) Teachers with two or three years of training, will receive a rating of:

E (excellent) will receive an annual increase of \$85; G (good) will receive an annual increase of \$75; F (fair) will receive no increase; P (poor) will not be reappointed, and F (fair) two years in succession will not be reappointed.

Teachers with four years' training will receive a rating of:

E (excellent) will receive an annual increase of \$95; G (good) will receive an annual increase of \$85; F (fair) will not receive an increase; P (poor) will not be reappointed, and F (fair) two years in succession will not be reappointed.

Teachers who have reached the maximum must maintain at least a G rating to be reappointed.

Credit for experience for junior and senior teachers will be rated on the following basis: Full credit will be given for high school and junior high school experience in the Racine schools, and in other standard junior and senior high schools.

For experience in elementary schools or in rural schools one-half credit will be given.

The schedule will not operate to reduce the salary of any teacher who may be transferred from the elementary grades to the junior or senior high school.

In no case may the total credit given for experience outside of the public schools of Racine exceed five years.

Salaries for junior and senior high school teachers with master's degree, granted by institutions with approval of the board, will in each case, be \$50 higher than the schedule.

Before heads of high school departments may be appointed there must be at least three teachers in the department including the department head. Four regular classes of 75 minutes will be considered the unit for each teacher.

The minimum additional for heads of departments will be \$150 and the maximum \$300. The additional compensation will be on the following basis: Three teachers, \$150; four teachers, \$175; five teachers, \$200; six teachers, \$225; seven teachers, \$250; eight teachers, \$275; nine teachers, \$300, maximum. Additional compensation of \$100 will be allowed the senior high school teacher in charge of the study hall.

D. Elementary and Junior High School Principals:

For elementary principals having under their supervision ten teachers and not more than 23 teachers doing regular grade work, the minimum will be \$1,800 per year, and the maximum \$3,000 per year.

For principals having under their supervision 24 or more teachers doing regular grade work, the maximum will be \$3,300 per year.

For principals having under their supervision a junior high school department or an elementary department and junior high school department, the minimum will be \$2,000 per year, and the maximum \$3,500 per year.

Credit for previous experience and annual increases will be determined on the basis of credits, according to the following table:

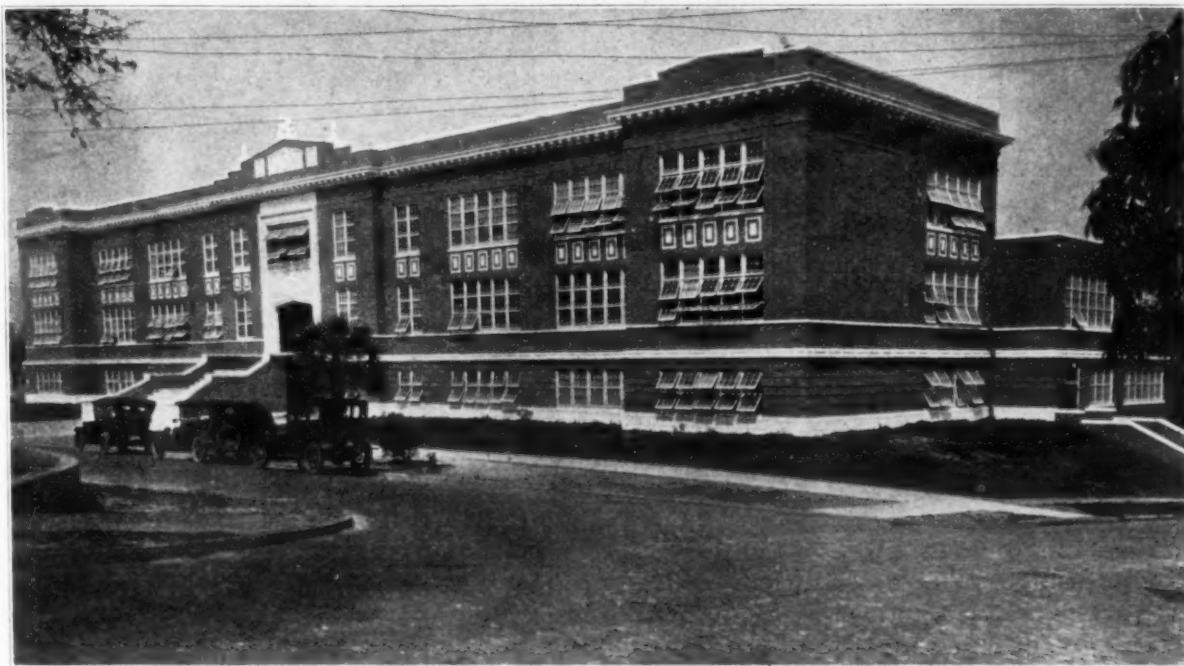
Average Daily Attendance One Year	Number of Credits
100-199 pupils.....	1 credit per year
200-299 pupils.....	2 credits per year
300-399 pupils.....	3 credits per year
400-499 pupils.....	4 credits per year
500-599 pupils.....	5 credits per year
600-699 pupils.....	6 credits per year
700-799 pupils.....	7 credits per year
800-899 pupils.....	8 credits per year
1000 or more pupils.....	10 credits per year

For junior high school or senior high school teaching one credit will be given for each year, and for rural or elementary teaching, one-half credit will be given for each year.

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Dunham Heating Service is a vital, living thing, pregnant with a mighty power to plan—to produce—to sell and to service the products of a manufacturer whose ideal stops neither with the plan nor the product nor the sale nor the installation, but marches on through the years as a safeguard to every purchaser of any Dunham Trap or other product that has ever left the Dunham Factories.

That is our conception of Dunham Heating Service, as it is reflected in the Dunhamized modern school as well as in every other type of Dunham installation.

The Pensacola (Fla.) High School shown in this advertisement was designed by Architect Walker D. Wills. Chas. A. Born installed a Dunham Vacuum Heating System.

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SCHOOL ADMINISTRATION

—Barnesville, O. Supt. H. Clay Skinner has conducted some special studies of the junior and senior high school covering administrative and supervisory phases.

—The increasing number of special weeks to be observed by the schools has caused the school authorities at Cambridge, O., to seek a solution for the problem. Accordingly, the plan was tried of assigning a special week to particular schools at their individual project. For instance, constitution week was assigned to the Central School, fire prevention week to the Glass Plant School, etc. The plan has worked successfully in meeting the problem of numerous observances.

—At Bridgeton, N. Y., the office of primary supervisor has been discontinued and a helping teacher has been provided each principal. The principals are now giving one-half their time to actual supervisory work.

—Short course for rural schools is the only possible solution for the low attendance record of farm boys and girls, according to State Supt. Francis G. Blair of Illinois. Quoting figures from the Illinois census of 1920, Mr. Blair declared that only 42 per cent of the rural boys and girls are regularly enrolled in any school.

The figures show that there are 118,629 students between the ages of 14 and 20, who are not attending school. Assuming that one-half this number are boys, there are in the state 76,672 boys who are not reached by any school.

The figures indicate that there is even a larger field for development in short-course work than has ever been developed by the full-time schools. Difficulties in the way of developing short courses are the lack of room and equipment, the farmer's prejudice against practical work, the dislike of boys for school, and the insufficient teaching force to take care of such courses.

—Seattle, Wash. The department of Research, which was established in October, 1922, under the direction of Mr. F. C. Ayer, has been continued for the present year under the same part-time plan with the university.

—Superintendent E. C. Hartwell of Buffalo, N. Y., has issued an attractive pamphlet on the offerings of the night schools of that city.

Last year these schools enjoyed an enrollment of over 23,000 students. Dr. George E. Smith is in charge of adult education which is included in the night school program.

—Wellston, O. Steps have been taken toward the inauguration of a flexible promotion plan for all grades.

—Steps have recently been taken by the Wisconsin department of public instruction to formulate a plan for equalizing educational opportunities in the state. The plan advocated by the department is as follows:

1. The creation of a state fund to be distributed to rural school districts on the basis of the wealth of each district and the number of teachers employed.

2. The enactment of a law requiring each elementary school teacher to present a certificate showing the completion of a two-year normal or college course, and requiring each high school teacher to have an education equivalent to that received in a four-year college or university.

3. The organization of a county board analogous to the present city school boards.

—An extensive night school program has been inaugurated at Hudson, N. Y. Courses are open to adults and to boys and girls not enrolled in the high school. The teachers are practical workers in these trades under the direction of Mr. H. J. Houle, director of vocational education in the high school.

A general survey of school building conditions in Hudson, N. Y., has just been completed by the New York State Education Department. An extensive program of development has been formulated, covering the probable needs of the schools for the next twenty years.

—At Nazareth, Pa., some seventy students of the new high school went on a strike because the school board had failed to provide window shades.

—Syracuse, N. Y. School janitors will be paid a dollar an hour from seven o'clock on, where schools are used at night, under a new policy of the board. They will receive one payment no matter how many organizations use the building. The rule is the result of a controversy which threatened to close the schools for community purposes.

—At Beverly, Mass., the school janitors, attendance officers and custodian of buildings have been given increases in pay. Janitors will be given increases of \$2 a week, custodian increase of \$5 a week, and the attendance officer was raised to \$1,820.

—Springfield, O. The board has eliminated the high school fraternities which have attracted a membership of more than 200 boys and girls. The action was taken following an opinion of the attorney general and an order of the state superintendent giving the board a time limit of thirty days.

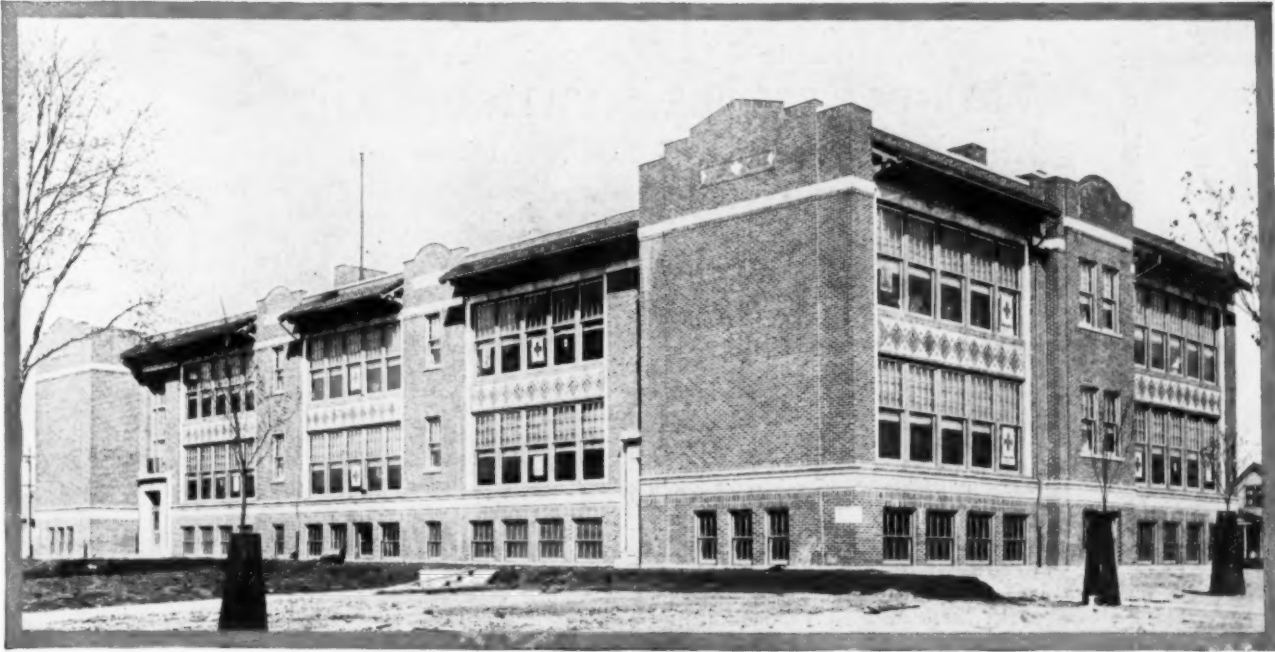
—At Mobridge, S. D., an inventory of the supplies and equipment of the school district has been undertaken. The board has renewed the insurance on four buildings at a total of \$215,000 for the group.

—Paducah, Ky. According to a recent decision of the board, corporal punishment may be inflicted on unruly pupils with the consent of the principal. The request to change the rule dealing with corporal punishment was made by Supt. L. J. Hanifan, who declares that the lack of it impeded discipline in the schools.

—The school board at Akron, O., has undertaken a study of the problem of retarded children. Supt. C. R. Reed, who submitted his report to the board, declared that the retarded student problem was one of the most serious at the present time. He estimated there were 465 pupils in the retarded group, many of whom had been in the same grade two or more years. Mr. Reed declared the problem to be an individual one, and pointed out that each student must be studied to determine the source of his failure to make good in classes.

—Howard W. Nudd, director of the New York Public Education Association, charges that the appointment of Miss Lucile Nicol to the position of district superintendent of the New York City schools was due to favoritism. He urges a better system of appointment.

—Cedar Rapids, Ia. The board has adopted a rule prohibiting book agents in the schools. The board will purchase all books and magazines at a greatly reduced expense. Candy sales in which the children provide the candy, indiscriminate collections and the distribution of advertising literature are also prohibited.



Whitney School
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June weather in less than 90 minutes!

WITHIN 90 minutes of starting the Direct Transmission Heaters of "The American System," your class rooms will have June day weather conditions though outside it be far below zero.

Scientific tests have proved that in regard to temperature, humidity, distribution, motion, odors, CO₂ and dust and bacteria content, the air that your teachers and pupils will breathe is 92% as perfect as that of a perfect day in June.

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One responsible company of 40 years' standing will engineer, install and guarantee the American System in your school. It will back its guarantee with yearly inspections free of charge.



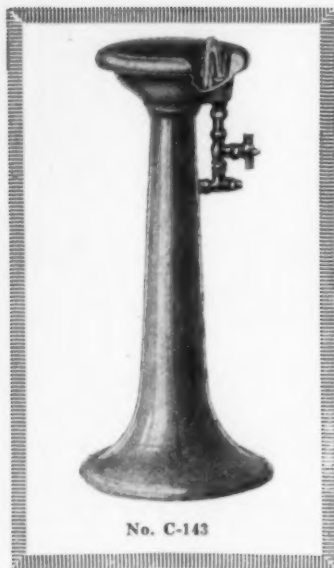
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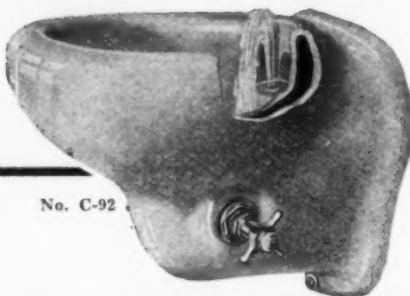


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They combine all the conveniences—all the worth while features of the vertical stream fountain, but in addition incorporate a "slanting stream" and a nozzle that is raised slightly above the sloping base of recess, which prevents bacteria from falling back upon the jet, thus eliminating all possibility of contamination. The copious drinking feature of the vertical stream fountain is retained, as the mouth comes in contact with the stream at a point where it loses its momentum.

Rundle-Spence "Vertico-Slant" Drinking Fountains are absolutely germ-proof,—no filth collecting crevices that are impossible to clean, as the bowls are of extra heavy vitreous china,—correct in design,—free open construction,—principally and essentially, sanitary—durable in construction, plus, economical in cost.

Made in a variety of designs to meet every requirement.

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SUCCESSFUL SCHOOL BOND ELECTIONS

—By a vote of 853 to 361 the citizens of Pontiac, Mich., have approved the recommendation of the board of education for a school bond issue of \$750,000. The program calls for a junior high school and several additions to grade schools. James H. Harris is the superintendent of schools.

—At Chicago the increase of the school levy from 75 cents to \$1.00 was carried by a majority of 125,000 votes. This means an increase of 25 cents on every \$100 assessment, and will add from \$4,000,000 to \$8,000,000 to the school fund depending on the increase in the assessed valuation of city property. The children forced into half-day classes became active election workers. Every ward was carried for the school tax.

—A \$3,500,000 bond issue was carried at Reading, Pa., by a vote of three to one. The favorable vote is largely the result of information conveyed through a survey which was made without cost to the school district by the bureau of buildings under the direction of Dr. Hubert C. Elcher of the state department of public instruction.

—The school levy election at Cincinnati, Ohio, calling for \$400,000 additional to the regular income, was carried by a majority of 13,000 votes. This result is most gratifying since the city levy and all requests for bond issues for street improvements and parks were defeated by large majorities. The school levy was the only taxation provision voted upon which was carried, and that received within 3,000 of 60 per cent of all the votes cast. "The additional \$400,000 will enable us to carry forward our entire program of education," said Superintendent Randall J. Condon, "and to maintain our salary schedule with full provision for automatic increases to which the teachers will be entitled." The board of education, under the slogan "Give every Child his Right of School" went before the voters with a complete financial statement and an enumeration of the things needed for the schools. The appeal was signed by Samuel Ash, F. B. Dyer, Emma W. Fillmore, J. G. Fisk, John B. Hollister, Louis Schwab, J. M. Withrow and Superintendent Condon. Sample ballots were provided.

—Bellevue, Ohio, carried its \$250,000 school bond issue by a large majority. "This is the largest amount ever called for in this community," said C. M. Carrick, superintendent of schools, and the first school bond proposition to go over the first time in Bellevue in twenty years.

—After one of the hottest campaigns in the history of Bethlehem, Pa., that city voted a school bond issue of \$750,000, by a majority of 174 out of 6,000 votes cast.

—The \$2,000,000 school bond issue presented to the voters of Harrisburg, Pa., met with defeat by a vote of 7,943 to 5,874. The failure to carry the issue attracts attention not only because the amount involved is large but because it is the first big flunk in contests of this kind since the Portland, Oregon, election last spring. As far as can be learned the Harrisburg defeat is not so much due to a disinclination on the part of the public to help the schools as it was to a combination of unfortunate local circumstances.

RULES FOR FIRE DRILLS

Instructions concerning fire drills issued to Cincinnati principals by Supt. R. J. Condon and approved by the board of education are as follows:

Essentials of a Good Fire Drill

1. Complete control of pupils by the principal and teachers; never any confusion.
2. Promptness of action; never any delay.
3. Certainty of procedure; never a mistake; never any uncertainty; never a misunderstanding; know exactly what to do; do it.
4. Self-Control of pupils; never a fear; alert; heads up; eyes front; all their "wits about them."
5. No delay in the rapid movement of pupils from the time they leave their rooms until they are out of the building; no congestion of pupils at any point; marching four abreast wherever possible; good line formation; "double-quick."
6. All exit doors swung out and fastened open.
7. All gates from yard to street opened.
8. All doors except outside exits closed by last person passing through.

9. Pupils so divided as to exits that all lines, as far as possible, are out at the same time.

10. Lame, blind and timid children, if any, especially guarded.

11. Certainty that all pupils and teachers are out of the building.

12. Pupils lined up away from the building, with exits entirely free for entrance of firemen and fire apparatus.

13. Absence of every possible danger, except that of fire and smoke.

14. Pupils and teachers trained to guard all points of special danger.

15. No rugs or mats at foot of stairs, or in corridors, during drill.

16. No obstruction of any kind on stairs, in corridors or exits.

17. Every drill given as though a fire were present.

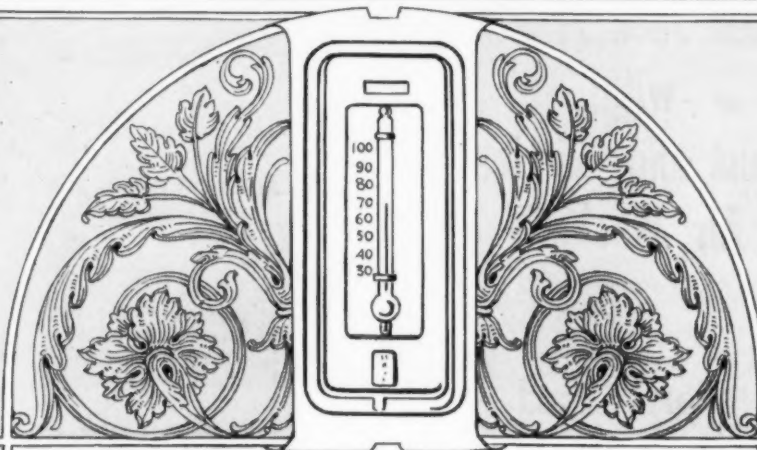
18. Fire gong always in order; never used for any other purpose than as fire signal; to be tested every morning, before the admission of pupils, by the janitor or by a teacher or by pupils assigned by the principal, with a written report.

19. Any signal upon the fire gong; even a single stroke, means: fire; clear the building; drop everything; move at once. The ordinary signal shall be three threes, sharply repeated; but whatever the signal given, it means: go—and go at once in accordance with the fixed order of going.

RULES AND REGULATIONS

—The school board at Savannah, Ga., has adopted rules and regulations to govern the organization and supervision of the schools, instruction, and conduct of pupils. The rules are subject to amendment or alteration by a majority vote of the board.

—The Cincinnati school board has decided to continue the requirement that night school students make a deposit of \$3 per year for books. Withdrawals in the night schools are very large each year and it is believed that the number of books kept would be considerably increased if the deposit were not required of pupils. Withdrawals from night schools in the last three years have amounted to 45 per cent of the enrollment.

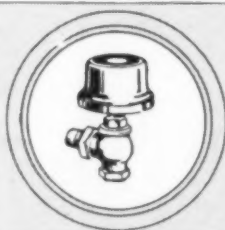


THE exclusive features in the Johnson Pneumatic System Of Temperature Regulation should strongly decide your selection of The Johnson for your schools. These exclusive features are not advanced merely as sales advantages, but service advantages after your temperature regulation system is installed. It is one important thing to equip your schools with temperature regulation. It is another and more important thing to equip your schools with The Johnson Pneumatic System: because of The Johnson's exclusive features.

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better health
higher scholarship
and lower fuel costs

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E. H. Enger, Arch. Eng., Board of Education



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Aurora High School, Aurora, Minn.
Tyrie & Chapman, Architects



Hutchins Jr. High School, Detroit, Mich.
Malcolmson, Higginbotham & Palmer,
Architects

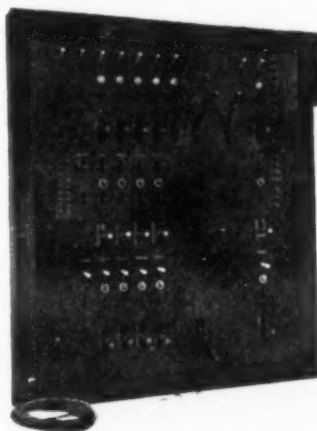


Cass Technical High School, Detroit, Mich.
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has practically become

Standard Equipment
In the Finer School Auditorium

The need of a flexible, safe lighting control for school auditoriums is so effectively fulfilled with the Major FA System that it is becoming the equipment chosen by leading architects and school board officials.



So many advantages are obtainable in this system that full investigation should be made before a selection is made for any school, large or small.

We have a book of information in which you will be interested, entitled "The Control of Lighting in Theaters" which will be sent you free upon request.

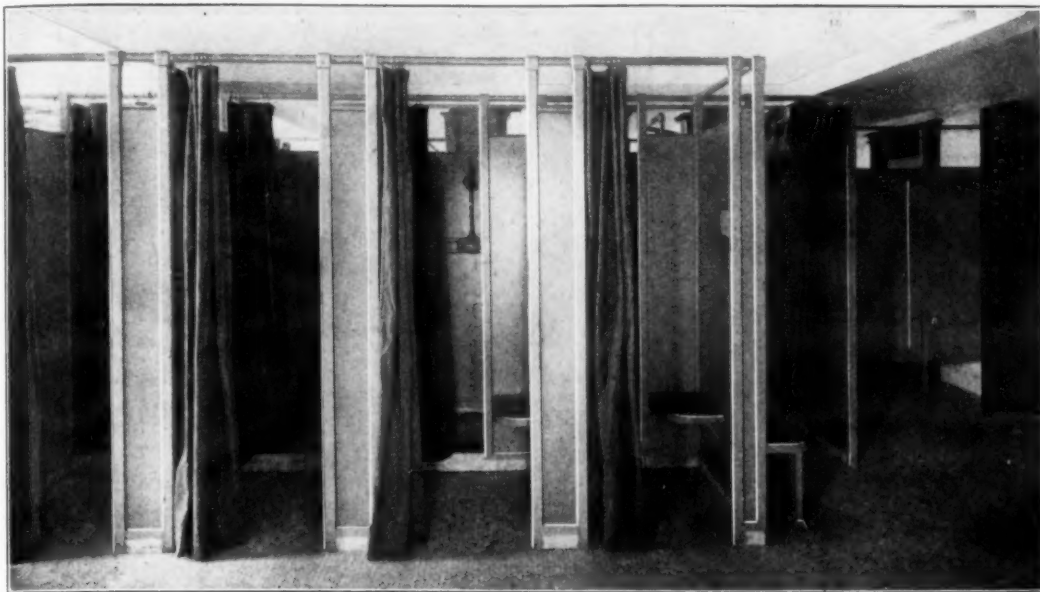
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AN OUTLINE FOR SCHOOL BUILDING INSPECTION

The city of Philadelphia employs a corps of school building inspectors who regularly visit the schools and make a thorough inspection of the physical condition of the plant and the manner in which it is being maintained by the janitors. The following is the outline used by the inspectors in their official and subsequent inspections.

INITIAL INSPECTION

Upon every change of inspectors from one district to another, the first re-inspection of each building is to be regarded as an initial inspection. Each inspector, on his initial inspection of a building, shall report on the following items, and on every succeeding inspection note any changes from the original conditions:

- A. Fire and Accident Protection
 1. Character of Construction.....
 2. Exposures to Fire from Surrounding Properties....
 3. Condition of Fire Escapes.....
 4. Outside Protection—No. of fire hydrants within 400 feet
 - Fire Alarm box No.....
 - Distance
 - Location of Key
 - At the box.....
 - At the school.....
 - Nearest Fire-engine House.....Blocks
- B. Sanitation
 1. Normal pupil capacity of building—Girls.....
 - Boys.....
 2. Pupils' toilets—Location
 - Type
 - Number of seats—Girls.....
 - Boys.....
 - Number of urinals.....
 - Lineal feet of urinals.....
 3. Are floors properly graded to drain?.....
 4. Is there a floor drain and water connection for flushing?.....
 5. Light—Natural, adequate?.....
 - Artificial, adequate?.....
 6. Heated?.....
 7. Lavatories—Number
 - Location
 - Water supply—Hot
 - Cold
 8. Number of teachers—Men.....
 - Women.....
 9. Teachers' toilets—Number of seats—Men.....
 - Women.....
 10. Water supply of building—Adequate?.....
 - Economically used?.....
- C. Operation of Plant
 1. Are ceilings protected over boilers, heaters, heat pipes, smoke pipes, and gas flames, and woodwork back of, and floors under, gas ranges?.....
 2. Is woodwork protected where steam or heat pipes pass through floors, ceilings, partitions, etc.?.....

*The inspector is expected to answer definitely yes, or no, in each case as necessity requires.

3. Are electric wiring, lights and other apparatus properly protected?.....

SUBSEQUENT INSPECTIONS

To include reports on the following items:

D. Fire and Accident Prevention

1. Fire Extinguishers—No. of 2½ gallon.....
- 1½ gallon.....
- 1 quart
- An extinguisher for every 100 feet of corridor space in fireproof buildings?.....
- An extinguisher for every 2½ classrooms in non-fireproof buildings?.....
- An extinguisher about electrical apparatus, engine rooms, motion-picture booths and kitchens?....
- Good condition?
- Charged within a year?.....
2. Sand Buckets—About ranges?.....
- Marked "fire"?.....
3. Fire Blankets—In each domestic science kitchen?.....
- Marked "for fire only"?.....
4. Fire Hose—Are all parts of cellar or basement reached by fire hose?.....
- Good condition?
5. Fire Alarm Gongs—Good condition?.....
6. Waste Paper—Baled daily?.....

Used only for fire?.....

Safely stored?

No. bales on hand?.....

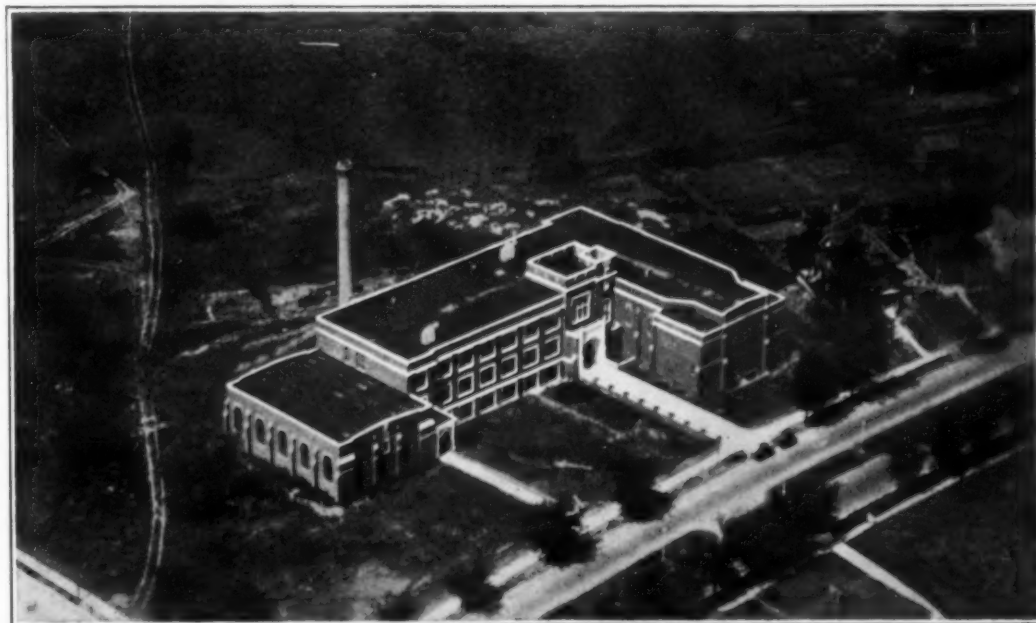
7. Are heat and vent registers, boxes, ducts, and flues free of combustible material?.....
8. Are coat closets, wardrobes, or lockers free from fire hazards?
9. Are curbs, pavements, yards, inlet covers of man-holes, water, gas and sewer connections in pavements, and flagpoles in a safe condition?.....
10. Are entrances, steps, stairways, hand rails for same, passages, roofs, cornices, and other projections, walls, grilles over areas, guards around entrance areaways, and moving parts of machinery in safe condition?

E. Sanitation

1. Stack stoves—Good condition?.....
- Fire maintained constantly?.....
2. Wash rooms—Clean?.....
3. Toilet rooms—Clean?.....
4. Toilet paper—Sufficient dispensers?.....
5. Latrines flushed according to directions?.....

F. Cleaning

1. Sweeping according to directions?.....
2. Dusting according to directions?.....



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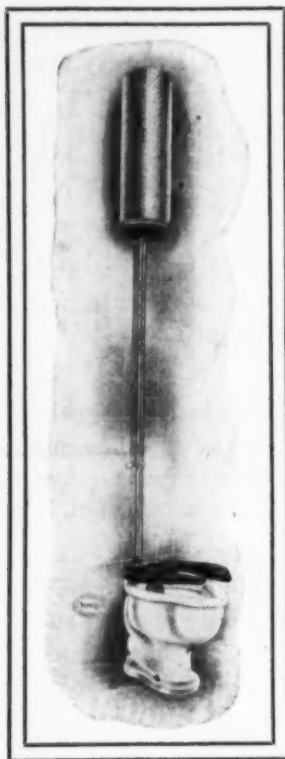
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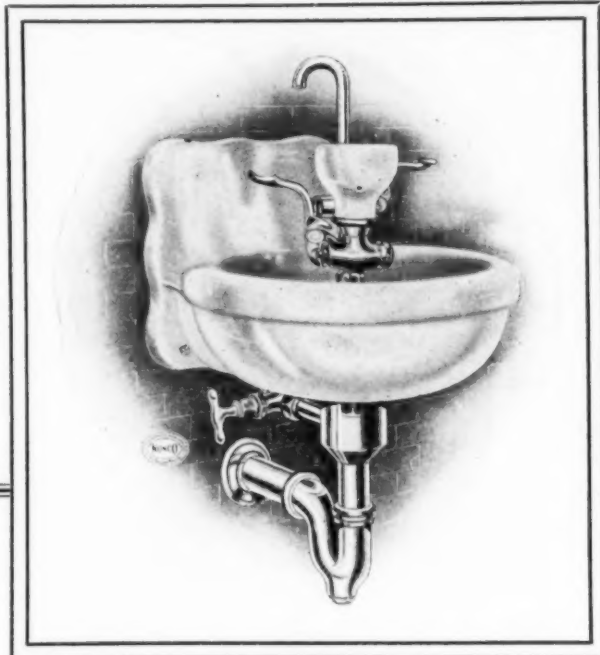


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3. Walls cleaned according to directions?.....
4. Windows cleaned according to directions?.....
5. Are fences, doors, wainscots, walls and any other surfaces free of dirt, pencil and chalk marks?....
6. Yards clean?
7. Sidewalks clean?
8. Window areas clean?.....
9. Air ducts and plenum chambers clean?.....
10. Wooden floors oiled?.....

G. Operation of Plant

1. Coal handled economically?.....
2. Fires properly cleaned?.....
3. Are general conditions in and about boilers, engines, generators, motors, fans and pumps good?
4. Are boiler tubes, combustion chambers and other inside spaces of boilers, smoke breeches, pipes and base of smoke flues, and boiler water clean?....
5. Engines and motors operated at full speed?.....
6. Knocks or noises about pumps, generators or motors?
7. Steam or water leaks about boilers, engines or pumps?
8. Undue sparking about generators or motors?....
9. Floors and machines free of grease and oil?.....
10. Windows of fresh-air rooms or ducts kept open when plant is in operation?.....
11. Cheesecloth filters clean?.....
12. Is surplus direct radiation cut out in mild weather or after the building has been heated to the proper temperature?
13. What part of the building overheated according to temperature chart?.....
14. What part of the building not sufficiently heated according to temperature chart?.....
15. Temperature regulating system operating?.....

H. General Housekeeping

1. Are covered metal containers used for rags, shaving and other waste materials of a combustible nature?
2. Metal cabinets used for storing paints, oils, etc.?
3. Are there any unauthorized installations or connections with gas or electric lines?.....
4. Are ashes stored according to directions?.....
5. Storage closets clean?.....

Procedure for Inspectors

—Inspectors will operate under the direction of the superintendent of buildings, who will assign to each inspector each month, a definite list of the schools to be visited.

Inspectors will work eight hours per day, from 8:00 A. M. to 5:00 P. M., with one hour off for lunch. When requiring special information, they must start earlier, or later, as may be necessary.

Inspectors will, once each month, make a thorough examination of each building and all

parts and contents, for fire and accident prevention, sanitation, housekeeping, domestic economy, operation and care of heating, lighting and ventilating apparatus, and assist in the conservation of fuel.

Inspectors will address principals and janitors in a courteous, straightforward manner and, by suggestion and advice, assist and instruct janitors in their duties, and request the principal or janitor to at once correct hazardous or insanitary conditions, and see that the condition is remedied before leaving the building.

Each inspector must make daily written reports of each school inspected, showing the condition of the building, apparatus, etc., with his criticisms and suggestions. Reports must be made on specified forms in triplicate; original for the superintendent of buildings, duplicate to be left with the principal, and the triplicate to be retained by the inspector.

While principals hold each month two fire drills, each inspector must once each month call upon a principal without prearrangement for a fire drill to be conducted in his presence, and will make a written report, noting the time the drill was called, the time taken to vacate the building, the exits used, the action of the pupils, and any suggestions for improved methods.

HYGIENE AND SANITATION

—Dr. S. Josephine Baker, of New York City has become consulting director in maternity and infancy and child hygiene of the Children's Bureau, U. S. Department of Labor. Dr. Baker is one of the leading authorities in the field of child health. She was for twenty years chief of the bureau of child hygiene of the New York City health department, where she laid the foundations for the better care of mothers and babies of New York. Dr. Baker's work in the Children's Bureau will be largely in the direction of giving advice in the determination of policies and the planning of work, and in the writing of reports concerning the work.

—Claremore, Okla. Medical inspection has been introduced for the first time this year. Local physicians and dentists donated their services for the work.

—New Haven, Conn. In November the local department of health administered the Schick

test to the pupils of the Prince School, to determine the children susceptible to diphtheria. The school is located in a section where there have been an unusual number of cases, and the department seeks to reduce the number of cases, as well as the number of deaths. The tests are followed by the usual immunizing measures for diphtheria.

—New York, N. Y. The board of education has been urged to undertake an early revision of the salary schedules upon a more equitable basis. The local teachers' union, in a communication, points out the importance of the single salary schedule for all teachers having the same experience and qualifications and presents its arguments for such a schedule.

IOWA TAX LEVIES ADOPTED

—The Boards of Supervisors in the Several counties of Iowa have adopted the tax levy that will fix the amount of tax to be paid in each taxing district during the calendar year of 1924. Below is a table showing the comparison of what the rates of taxes will be in mills in a number of school districts picked at random. The table shows the rate in mills for school purposes as follows:

	Total School
Wapello	55
Columbus Junction	72
Morning Sun	74
Washington	83
Lone Tree	47.8
Wilton	59
Muscatine	79.5
West Liberty	36
Atalissa	34
Nichols	43
Tipton	45.2
Durant	65.6
West Branch	64

It will be noted that the West Liberty Independent School District has the lowest levy of the thirteen districts with the single exception of Atalissa, in Goshen Independent District No. 1. Members of the school board advise that an increase of the tax levy for school purposes will not be probable for at least two years. This is in face of the fact that the district has retired its school building bonds faster than they have matured.

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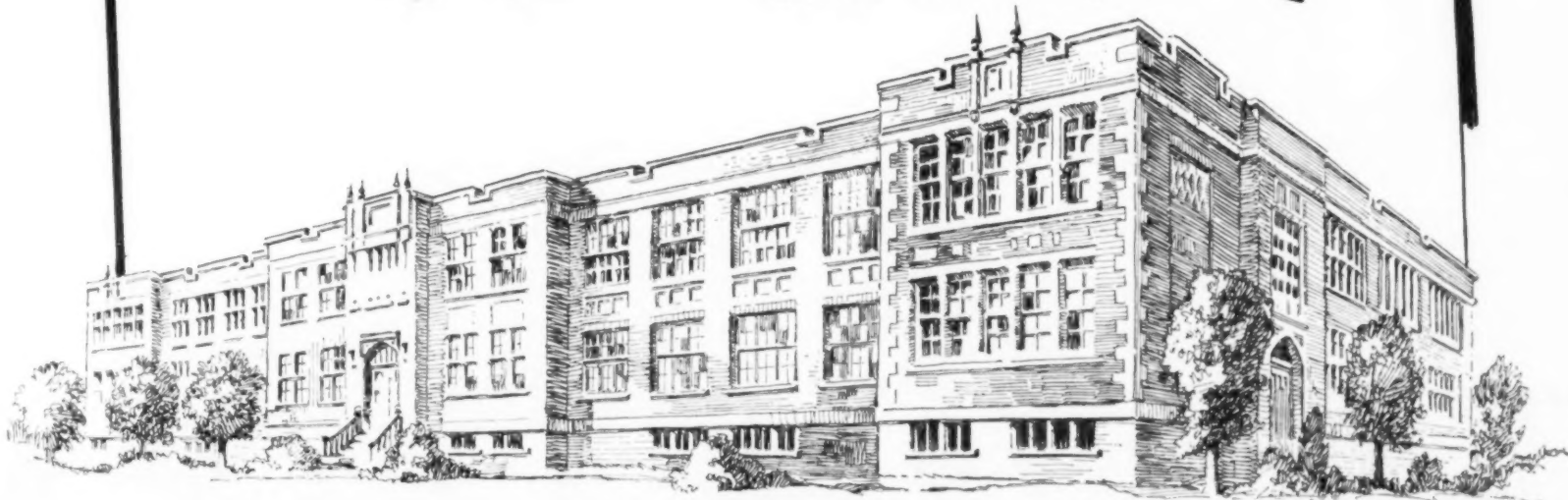
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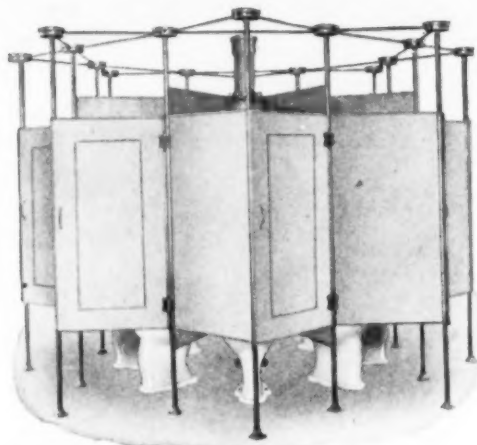
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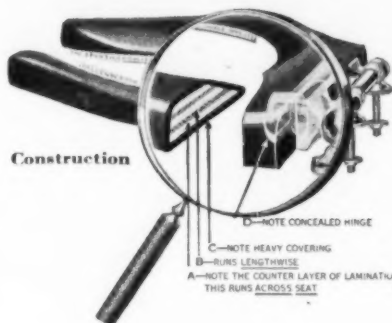
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SCHOOL BUILDING NEWS.

—Gary, Ind. A recent report of the auditor of the school system shows that the cost of education per pupil during the year 1922-23 was \$99.19, as compared to \$134.58 in Hammond, \$94.02 in East Chicago, and \$123.96 in Whiting, Ind.

The total school enumeration in Gary for the year was 16,684, that in Hammond was 13,196, that in East Chicago 11,195 and in Whiting it was 2,995.

The auditor's report shows that the famous "Wirt" system is by far the cheapest in the end. While the figures show that the cost of public school education in Gary is less than in adjacent cities, they also show that the Gary pupil receives far more than do the pupils in the schools of Hammond, East Chicago or Whiting. In Gary, 97 per cent of the pupils have a seven-hour day. In Hammond, they have only a five-hour day.

Instructional services in the Gary schools cost \$73.23 per pupil. In Hammond the same cost was \$80.52; in East Chicago it was \$65.51, and in Whiting it was \$74.06.

In the operation of the plant Gary costs are much below those of the other cities. In Gary the cost of plant operation per pupil is \$4.23; in Hammond it is \$27.48; in East Chicago it is \$13.86, while in Whiting it is \$20.36.

Under the head of "other expenses" the cost per pupil in Gary is \$2.00; in Hammond it is \$5.04; in East Chicago it is \$2.60; in Whiting it is \$4.19.

—Flint, Mich. Retrenchment in the interest of economy is to be the order of business for the next year. Plans for reducing the cost of new schools have been discussed by the school board and the architects of proposed buildings. Contractors have agreed to utilize every possible opportunity for reducing building costs.

—Joliet, Ill. The board has considered plans for the erection of a new school and the remodeling of two further schools to fit the structures for school purposes.

—Wellsville, O. The board has intimated that it may be necessary to close the schools eventually if the proposed three mill tax levy is defeated at the polls. The board is not permitted to borrow in anticipation of the next August distribution of taxes and present funds are now practically exhausted.

—The voters of the rural districts of Jefferson County, Alabama, were asked to approve a three-mill educational tax for a period of 25 years. The approval of the tax will mean that the county board will begin active work on a \$1,000,000 school building program. The program which is to be completed in four to five years will place the rural schools on a par with any in the country.

—Columbus, O. The passage of the two-mill tax levy, in the opinion of the board, does not provide additional money for the schools, but only enough to complete the present program. Supervisors and principals have been asked to limit their budgets to the smallest amount possible with good service.

—An explanation of the new distribution law of Illinois for school district budgeting has been embodied in a pamphlet issued by Mr. H. B. Price, superintendent of schools in Whiteside County.

Under the provisions of the new law the apportionment will be made after a consideration of the length of the school year in days taught, the qualification of the teacher or teachers employed, the number of children of school age enrolled in school and the number of days each attends.

For instance a teacher must either have had eighteen weeks of normal training in addition to being a high school graduate or have had teaching experience of forty months. One of the two qualifications is required.

It is important also, according to the stipulations, that the reports of the school board or teacher be turned in on time. Under the sanitation law, the school must comply with the minimum requirements for the health and safety of the pupils.

Out of the \$8,000,000 provided by the state for the last two years, Whiteside's apportionment has been fixed upon a basis of the minor population of the various districts.

—Seattle, Wash. The school board has made a remarkable achievement in reducing the school costs \$250,300 during the fiscal year 1923. The saving was accomplished without a loss in efficiency or all-around usefulness. According to the figures compiled, the per capita cost in 1923 was \$101.82 as against \$107.45 in 1922. The expenditures amounted to \$4,422,600 this year, as against \$4,228,600 last year, but the average daily attendance in 1923 was 46,158 as against 45,241 in 1922. The economies were made possible by the elimination of waste in the operation and maintenance of the physical plant, the consolidation of classes, and other administrative policies.

—Spokane, Wash. The board has taken steps for the calling of a school bond election to be held early in March. At this election the voters will be asked to approve a bond issue of \$425,000 for the erection and equipment of a high school accommodating 600 students.

—The school board of Yonkers, N. Y., has asked for \$2,500,000 for carrying on its work next year. This is an increase of \$385,000 over that received for 1923.

—The school board at Schenectady, N. Y., has adopted a resolution asking that the common council limit the speed of motor vehicles to fifteen miles an hour within a radius of 300 feet of school buildings. The measure is asked as a protection to children on their way to and from school.

—Chicago, Ill. A definite move to give every school child a seat has been made with the submission of a comprehensive program to the board by the superintendent. In view of the additional funds to be available for building plans, Supt. P. A. Mortenson has asked that a committee of board members, teachers and principals be appointed to make an exhaustive study of schoolhousing facilities. The following problems will be taken up as a part of the inquiry:

1. The extended school year and day. This will include the "shift system" now in operation in many overcrowded schools, by which schools open at 8 a. m. and close at 5:30; and the proposal to run the schools all year, with two weeks' summer vacation.

2. New methods to use every inch of space in school buildings and property. This may mean removal of portable, erection of additions in their place and installation of more seats.

3. School organization. An effort will be made to classify all types of school management.

4. Size of buildings. The commission will try to decide whether future buildings shall be of the massive type or of the small class in which "personal efficiency" is paramount.

5. Community use of schools, and the problem it presents.

6. Standardization of school buildings for efficiency as well as economy.

—New York, N. Y. The progressive evolution of work in connection with the gigantic building program has developed the new E type building, the first contract for which was recently awarded. This type has a flexible plan, of colonial style, and is intended to meet the needs for elementary schools in various localities. It is the result of earnest cooperation between Dr. John A. Ferguson, chairman of the building committee, and Dr. Edward B. Shallow, representing the board of superintendents.

The next step in the schoolhousing problem is the development of the new type of high school known as the pavilion type, which has been the subject of a conference between the acting mayor, Murray Hulbert, and the president of the board, Mr. George J. Ryan. The plan anticipates the city's growth and the future high school requirements for many years.

—Utica, N. Y. An increase of \$108,680 in the cost of building a school over a year ago is shown in bids submitted for the erection of the Hughes School in South Utica. The lowest bid totaled \$588,418 as against \$479,738 on the same plans one year ago.

—Columbia, Ky. A grade school bond issue of \$14,000 was sold recently. The funds will be used for a new school.

—According to a report of the U. S. Bureau of Education, the value of all school property twenty years ago was \$601,571, whereas today the value is \$2,410,000. Twenty years ago 16,000,000 pupils were enrolled and today the enrollment is in excess of 22,000,000.

—Memphis, Tenn. It cost \$10,000 a month less to educate school pupils this year than it did last, according to Supt. R. L. Jones. The per capita cost for 1923 was \$3.90 and that for 1922 was \$4.30.

—Akron, O. The board has reduced its estimates on the Garfield School from \$800,000 to \$600,000. The reduction was made in the interest of lower school costs.

—Robert E. Wechsler, newly elected president of the Erie, Pa., board of education advocates the payment of new schools through direct taxation rather than through bond issues.

—A new school to cost \$202,000 is to be erected at Morris Cove, New Haven, Conn.

—Houston, Tex. The agitation over the questions of financial independence of school boards and the election of board members by the people at large, have discouraged the issuance of bonds for new buildings. The board has sought to relieve the congestion through the use of temporary buildings erected on the school grounds. These structures will comfortably house all the children until better provisions can be made for their accommodation.

—Lawton, Okla. New school buildings having a value of \$240,000 have been completed this year.



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SPEAKMAN COMPANY
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SPEAKMAN SHOWERS

SCHOOL ADMINISTRATION NOTES.

—Oak Park, Ill. Under the rules of the board, teachers and supervisors in the schools are given one day during the school year for visiting teachers in other schools. For a period of several weeks the schools are closed for visiting day privileges. The plan evaluates new methods of class management and makes the teachers acquainted with the most advanced elementary instruction.

—The school board at Newark, N. J., has ruled that newly-married teachers must limit their honeymoon to seven days. It appears that some of the teachers had requested rather extended furloughs for their honeymoons.

—Chicago, Ill. More than \$35,000 were collected from school children for 60,000 poor children over Thanksgiving. The money was given to parents unable to provide their children with clothing to attend school. Considerable clothing was also donated for this purpose.

—Dr. R. S. Sprague has been elected to the position of director of health and hygiene at New Bedford, Mass., succeeding Dr. Hugh G. Rowell.

—At Hartford, Conn., children suffering from malnutrition are looked after by the local tuberculosis society. The physician in charge is assisted by a nutrition worker who visits the four schools. Parents are invited to attend classes and to witness the weekly gains in weight of the children. At these classes, weekly weighings take place and foods are suggested for their beneficial effects. Children are urged to drink a quart of milk daily and to partake freely of fruit, cereals and vegetables. Tea and coffee drinking are discouraged.

An intensive drive to organize the parents of New York City has been inaugurated by the United Parents' Association. The slogan is "The future of America depends upon the child of today." Incidentally the organization intends to raise a fund with which to pursue its propaganda labors.

The 25th anniversary of the establishment of the local public schools was observed at Muskogee, Okla., during "education week." The history of the development of the public school system was recounted in connection with

the program which took place on November 22nd. All of the former board members, some twenty in number, occupied seats on the platform and took part in the program.

Wilby high school, Waterbury, Conn., has had the first unit system of electrical hair driers installed of any school in the country. These driers are used after swimming instruction. There are eight in use and already the system has been copied by a number of high schools about the state.

A cafeteria is to be installed in the Naugatuck high school and will be in charge of Miss Dorothy Moss, teacher of domestic science in the high school. Objection to children purchasing food from street vendors led to the adoption of the cafeteria by the board of education.

—A home and school association was formed last year at Conshohocken, Pa. The organization has done a great deal to foster a cooperative spirit between the home and the school, and to advance the interests of school children.

Arvie Eldred, superintendent of schools at Troy, has been elected president of the New York State Teachers' Association. He favors legislation that shall give financial independence to boards of education. He also believes in dividing the state association membership into zones for meeting purposes.

—The northwestern division of the Illinois State Teachers' Association elected J. O. Marberry of Rockford as its president. The other officers are: vice-president, J. P. Donner; secretary, Clara M. Ryan, Freeport; treasurer Allan H. Lancaster, Dixon.

A petition has been filed in the court at Norristown asking for the removal of the board of education of Conshohocken, Pa. The board, it is alleged, neglected to provide a fourth grade teacher and bought textbooks without securing bids. It is said that \$800 had been expended in violation of the code.

—The number of pupils in the New York City schools that have been placed on part time and in double or duplicate sessions has steadily been increasing since 1917, according to the Public Education Association. In that year the number was 118,707, while in 1923 the number rose to 377,794.

—President Bruce Griffiths of Wichita, Kansas, board of education has notified the parents that high school students must remain on the school premises during the noon hour, unless they go home for luncheon. The board of education of San Antonio, Texas, has adopted a similar course of action which is designed to eliminate street loitering and the patronizing of soft drink places. The pupils are provided with a good cafeteria meal and hence are expected to remain on the school grounds.

—Notwithstanding a tendency toward the reduction of school revenues, the teaching staff at El Paso, Texas, received this year \$50,000 in salary increases above that received last year. The salaries are based on a schedule which provides about half of the increase shall be an annual or experience increase. The remaining half is added for "points" earned, such as increases in educational equipment and proficiency.

—At Port Jervis, N. Y., in recognition of the service of teachers in the city schools, the local rotary club made a gift of flowers to the principals and teachers in the several schools of the city.

—The Mobridge Commercial Club of Mobridge, S. D., has followed the practice of financing the football season for the local high school. This year it cost \$1,050 to finance the football season. Under the plan, none of the students are solicited for aid. All teachers are admitted free.

—The attorney general of Iowa has rendered a decision to the effect that a school board may not forfeit a teacher's contract simply because she marries. The attorney holds that it is doubtful whether the adoption of a rule denying married women the right to teach, or providing for cancellation of the contract upon marriage is legal. It is pointed out that the legislature alone may enact such requirements into law. The opinion was given to the school board of Manchester which had adopted a rule against married teachers.

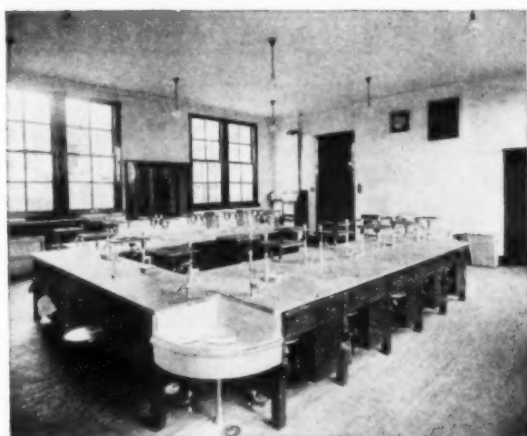
—Indianapolis, Ind. The school board has adopted a policy not to reemploy teachers who have completed forty years of service, unless the employment is for the good of the service. The rule becomes effective in June.



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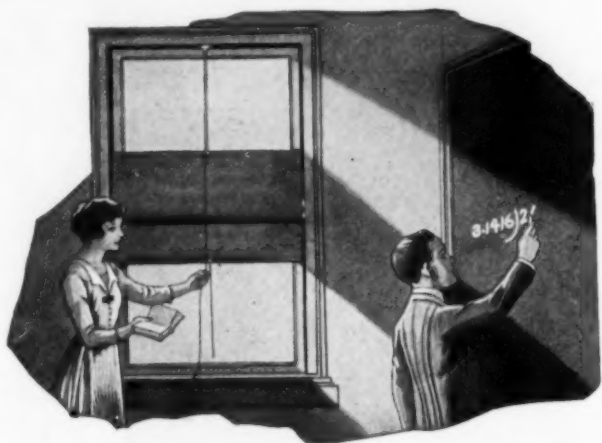
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THE keen fresh air of the cold wintry months will fill your schoolroom with a sparkling freshness and you will still have the benefit of the sunlight if your window shades are correctly planned. For this purpose Hartshorn manufactures two-way shades which operate from the center of the window toward top and bottom, allowing only the desired amount of light to penetrate and assuring perfect ventilation of the schoolroom.

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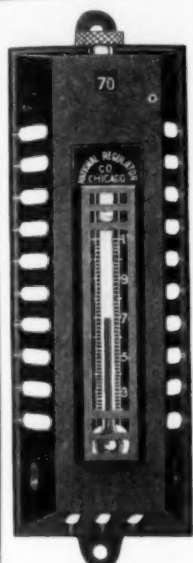
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Holophane R-r, totally enclosing luminaire, ideal for school illumination. Furnished in sizes from 75 to 500 watts, in one piece type or with removable bottom plate. Also supplied with complete fixture of either ceiling (C) or suspension (S) type.



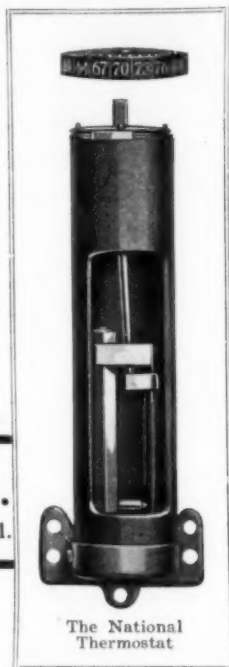
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Apparatus for the control of temperatures must not be of delicate construction. National Apparatus is neither complicated nor delicate. All equipment is the simplest in construction that can be designed. It has no auxiliaries and complicated devices. It also is rugged and strong, built to last for many years, and to give service day after day during this period.

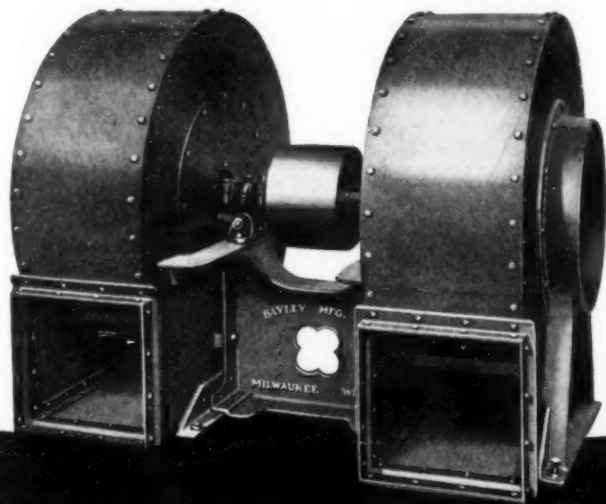
The National System is installed in schools throughout the United States and Canada. A list of installations will be sent on request and we invite your investigation.

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Next to efficiency, economical operation and durability are the most important requirements of any mechanical ventilation system.

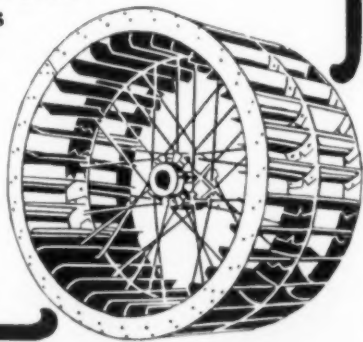
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meet all of these requirements and are in addition designed to occupy a minimum of space. Light, yet sturdy and durable, easy running, moving the greatest volume of air with low power and upkeep costs are a few Bayley Plexiform features. Made in various sizes, either single or double mounts, with outlets in any desired position, for engine, motor or lineshaft drive.

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77 Burned to Death in 20 Minutes

This is the terrible result of the Cleveland District School Fire in Kershaw County, South Carolina.

The potential cause of the fire—CARELESSNESS.

The Cause of the Tragedy—no proper means of escape—A SINGLE STAIRWAY.

Result—77 perished in the flames. Injuries to limbs and backs in jumping from windows.

Had there been a **Standard Spiral Fire Escape** this would not have happened.

This statement is proved in a letter received from Mr. F. L. Williams, County Superintendent of Schools, Carver County, Minn., in which he states, "Your fire escape at this school has proved very satisfactory. The best time made in emptying the building of 175 pupils was three-quarters of a minute."

Compare these figures with those at the top.

If your school is not equipped with a **SAFE** fire escape, Catalog A-1 will tell you about Standard Spiral Fire Escapes. Sent on Request.

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use them because they secure maximum protection for minimum outlay.

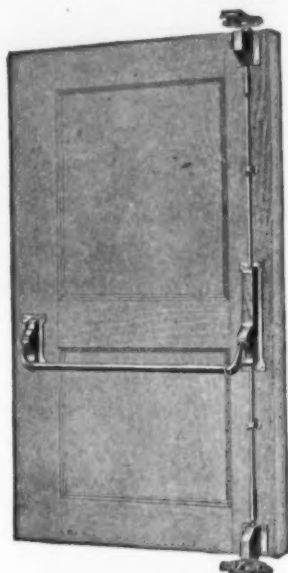
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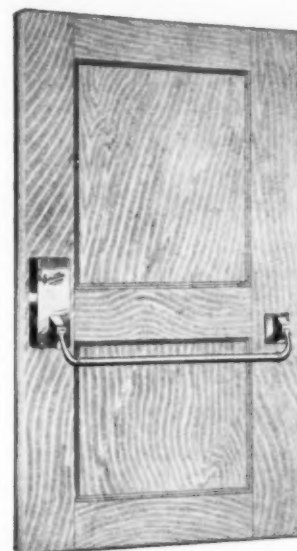
EXIT DEVICES PURPOSELY MADE FOR EVERY PURPOSE



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Frank F. Smith Hardware Company

79 CLAY ST., NEWARK, N. J.

The Locksmith's of Superior Exit Devices

ROOMS AND EQUIPMENT FOR INDUSTRIAL ARTS.

(Continued from Page 75)

and just as satisfactory work can be done by placing these booths up against the interior partitions, as shown on the illustrative plans of the electric shop, this arrangement has much to commend it. The equipment plans of this shop as well as the sheet metal shop and the wood-working shop of the Jefferson junior high school, Minneapolis, have been worked out by J. E. Painter, supervisor of industrial arts of the Minneapolis public schools, and Geo. F. Hale, equipment engineer of the bureau of buildings of the Minneapolis public schools.

Auto-Mechanics Shop

A convenient location of an automobile shop in a school building requires, first of all, that a driveway leads directly into the shop, and secondly, that the machine shop immediately adjoin it. The auto shop at the Edison junior-senior high school at Minneapolis meets both of these requirements. The door from the driveway into the auto shop is a vertical sliding door, which has its decided advantages. An overhead trolley system facilitates the movement of any heavy parts from the automobile to the racks shown on the floor plans. The provisions for gas exhaust through openings in the floor leading to flues connected to a fan exhaust eliminate danger to life and to health. The tool room, partitioned off from the shop by heavy woven wire is one of the most satisfactory ways in which to provide for such a room. A wicket in the wire door facilitates the distribution of tools and parts for which a signed written order must be given.

Wood Working Shop

The wood working shop is the successor of the manual training shop. It has dropped a number of the less valuable and sometimes questionable articles and exercises which characterized

the traditional manual training shop. Cabinet making has become more of an objective ideal, and the making of household furniture of certain types has been encouraged. The use of machinery for work of this nature is imperative and, on this account, space must be provided both for benches and machinery. This means a very large room. The floor plan of this room with an adjoining finishing room in the Jefferson junior high school of Minneapolis, is typical of space and equipment needed for a well-planned woodworking room.

Sheet Metal Shop

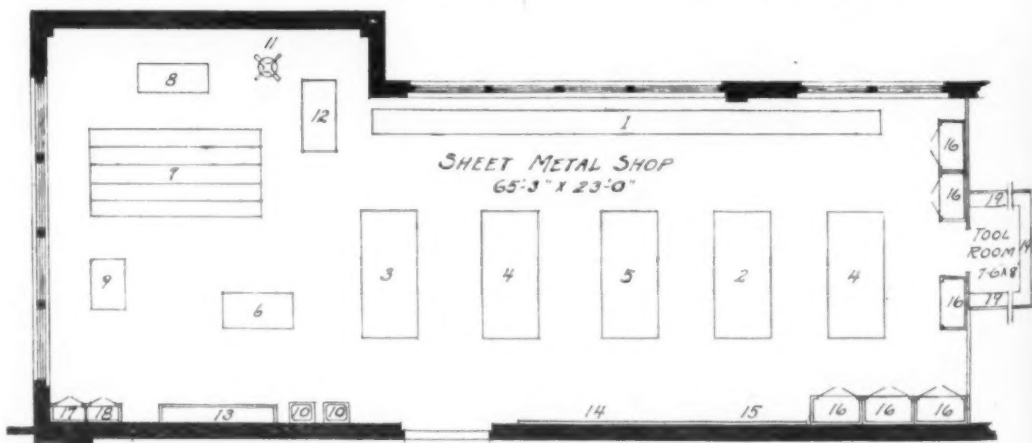
The chief requirements for a sheet-metal shop

are ample daylight and adequate floor space for handling materials. Large, heavily built tables, equipped with devices for working the sheet metal into various patterns, are best placed in a row about equidistant from the walls of the room. With this equipment may well be placed hot and cold water faucets of different designs so as to acquaint pupils with the troubles they are apt to meet in their homes, when the faucets get out of order.

Machine Shop

The machine shop in the Washington school at Duluth embodies in a very satisfactory manner the various features considered essential for

(Continued on Page 135)



JEFFERSON JUNIOR HIGH SCHOOL, MINNEAPOLIS.

Fig. 15. Compact and Convenient Arrangement of Equipment in Sheet Metal Shop. Total Floor Area 1,560 Square Feet.

EQUIPMENT SCHEDULE.

1. Work Bench 36' 0" x 1' 10"
2. Machine Bench 8' 9" x 4'
3. Layout Bench 8' 9" x 4'
4. Stake Bench 8' 9" x 4'
5. Soldering Bench 8' 9" x 4'
6. Squaring Shear 5' x 2' 6"
7. Bleacher Seats 12' 3" x 6' 3"
8. Demonstration Bench 5' x 2'
9. Teacher's Desk 3' 6" x 2' 4"
10. Lavatories 1' 9" x 1' 6"
11. Setting Down Machine 3' 8" x 3' 8"
12. Combination Brake and Folder 5' x 2' 6"
13. Drip Trough 8' x 1' 4"
14. Corkboard 10' 6"
15. Blackboard 10' 6"
16. Locker Cabinets 3' 6" x 2' each
17. Wardrobe 2' 6" x 1' 3"
18. Book Case 2' 6" x 1' 3"
19. Shelves 11" wide



The HOPE OF A NATION!

OUR CHILDREN! More than the wealth of our farms, our factories and our National resources, the children of our Nation determine our future greatness. Their health should be safeguarded with every possible means for the prevention of disease infection.

SAFEGUARD THEIR HEALTH!

Infections are spread by the public bar of soap just as much as they were by the roller towel which has been banished. The public bar of soap must go too!



LIQUASAN The Liquid Soap-

provides a perfect sanitary soap of great purity at low cost. It is the only standardized liquid soap — always the same because its manufacture is carefully supervised by laboratory methods. The price is the same everywhere. Ask for quotations on Liquasan Concentrate which costs least in actual use of any soap made. Sold through leading Supply Dealers everywhere.

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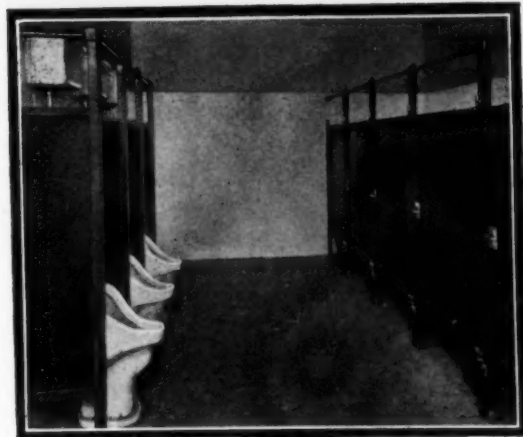
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EVEN in the restricted space of a small gymnasium it is possible to seat a good gallery with

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Circle A Bleachers can be erected quickly, and cleared away and stored easily and compactly. They can be used for indoor or outdoor sports and will pay their cost many times in gate money received.

Send for fully illustrated circular, "Handling the Growing Crowd," describing safety and comfort features, sizes, method of erection, etc.

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Ed. Glidden, Baltimore, Md., Architect. Henry Adams, Baltimore, Md., Engineer.
Geo. Woodward, Jr., Philadelphia, Pa., Electrical Contractors.

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What could be more of a monument to a manufacturer than to have his product specified as a protection for a city's public school building?

School No. 65 at Baltimore, Md., is a splendid example of a modern school building and adds another great school to the big list of public buildings already protected by Holtzer-Cabot Fire Alarm and Signal Systems.

This is why more and more architects and engineers are specifying Holtzer-Cabot Systems exclusively.

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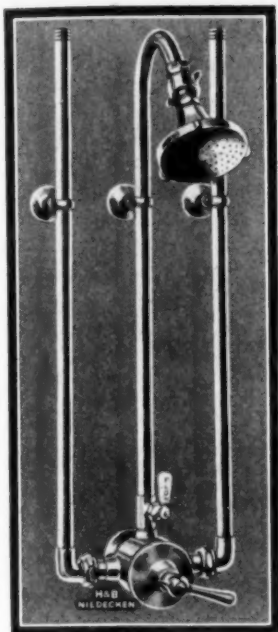
The DeVilbiss Spray-painting System will enable you to do your school painting with the same marked degree of advantage and profit.

A word from you will promptly bring further interesting facts.

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Are giving satisfactory service under trying conditions, some for years, in the largest shower installations in the world.

PERFECT CONTROL
insures economy of water and fuel

**The Heart of a Shower
Is the Mixing Control
NIEDECKEN MIXERS
Are Practically Everlasting**

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HOFFMANN & BILLINGS MFG. CO.
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MILWAUKEE, U. S. A.

*With other materials available for
interior finish at a less first cost,*

Why Use Marble?

Why do you prefer a natural gem to a perfect bit of glass of the same color, or to a synthetic stone of the same kind, of the same perfection, and of the same chemical composition?

Why are so many artificial finishing materials made to imitate marble, and why do so many of them receive names that suggest marble?

Why are such materials urged upon the Architect as being "just as good" as Marble?

When his client decides to use marble, why does the Architect dismiss all other finishing materials from his mind?

Answers to these questions will appear in subsequent issues.

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Main office and plant:
Gantt's Quarry, Alabama.

Headquarters Sales Department,
1701 Avenue A, Birmingham, Alabama.

Producers of all grades of Alabama Marble. Manufacturers and Contractors for interior marble work in Any Kind of Marble. Inquiries for prices and estimates should be addressed to the Sales Department, Birmingham, Alabama.

(Continued from Page 132)
such a shop. The machines have been arranged with a special view of routing the work in an orderly and efficient manner. The floor plan with its equipment schedule is the best interpretation of the requirements for a complete course of instruction along this particular line. A smaller shop may be designed for such elementary work as is ordinarily offered in the junior high school.

Print Shop

There are many suggestions for the arrangement of the equipment of a print shop. As a matter of fact, there seems to be more diverse

ways of planning a print shop than almost any other type of school shop. The floor plan of the print shop in the Aurora, Minnesota, high school and the two photographs of this room are included, as they illustrate in a very clear way just what can be done in a room of the usual dimensions of a schoolroom. This room happens to be a little wider than the ordinary classroom but the width may well be reduced to 23 feet without impairing the arrangement.

Use of Equipment Plans

In making practical application of any of the floor arrangements shown, it is well to keep in

mind that they are intended merely as guides for certain definite industrial courses offered, and that the omission of a part of such a course or any addition to it may alter the choice of equipment as well as its location upon the floor. Each project requires a careful study which should begin with the course to be offered in the school, followed by selecting the equipment necessary to give the proper training in the course, and completed by drawing the walls around the equipment and locating the room in its proper environment.

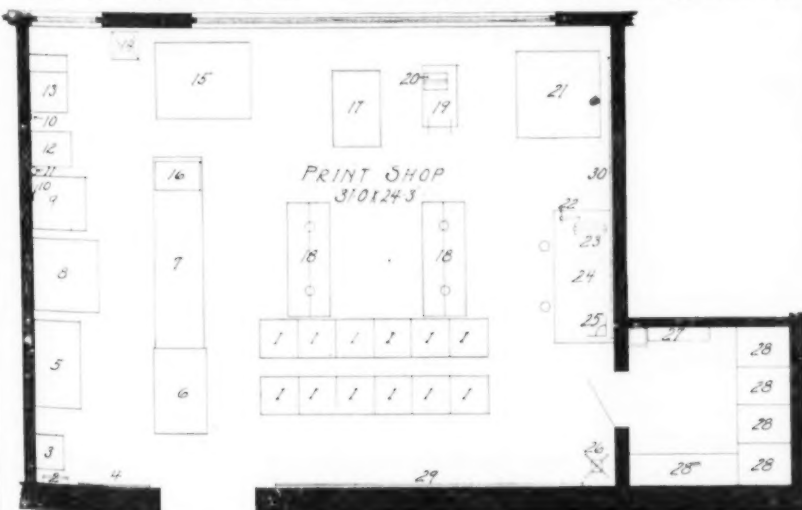


Fig. 17. Well Planned Print Shop, with a Very Satisfactory Arrangement of Equipment. Total Floor Area 822 Square Feet.

EQUIPMENT SCHEDULE.

1. Recitation Chairs
2. Paper Towel Rack
3. Lavatory 20" x 22"
4. Bulletin Board 24" x 48"
5. Roll Top Desk 32" x 54"
6. Flat Top Desk 32" x 52"
7. Work Table 10' x 2' 6"
8. Movable Work Table 46" x 46"
9. Twenty-four-inch Perforator 3' x 2' 10"
10. Wall Outlets
11. Floor Plug
12. Stitcher
13. Roller and Ink Cabinet 2' x 3'
14. Waste Can
15. 12" x 18" C. & P. Press and Motor 5' x 4'
16. Proof Press 12" x 18"
17. Imposing Stone 30" x 48"
18. Type Cabinets and Stand—each 48 cases 6' x 27"
19. Type Cabinet Brackets—12 cases 3' 3" x 1' 10"
20. Two Lead and Slug Racks 6" x 15"
21. Paper Cutter—30 inches 4' 6" x 4' 6"
22. Lead and Rule Cutter
23. Paper Rack
24. Work Table
25. Mitering Machine
26. Hat and Coat Rack
27. Storage for Cut Paper 36" x 96"
28. Paper Stock Bins 96" high
29. Blackboard 16' x 4'
30. Display Board 16' x 4'

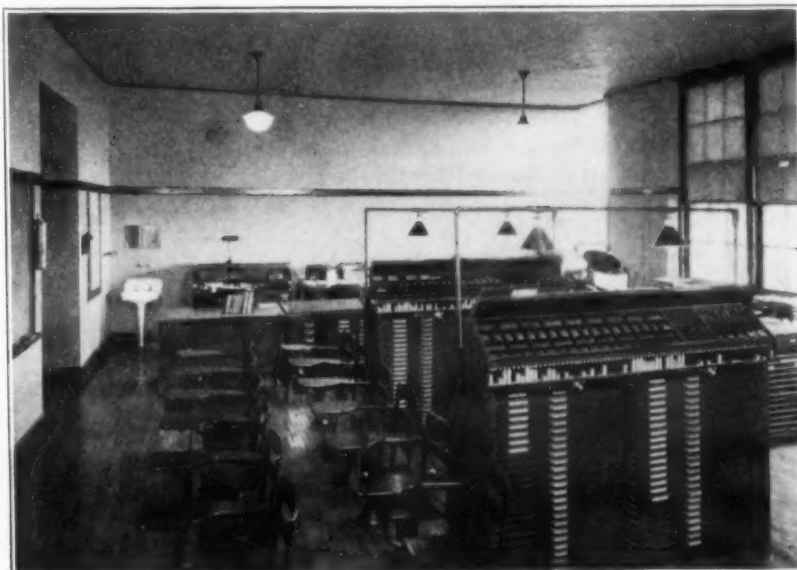


Fig. 18. View of the Print Shop, Aurora High School, Aurora, Minn.

Palmer's MULTI-SERVICE PRODUCTS

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You are assured of the
Utmost in Service and Satisfaction

When you insist upon *Palmer's* in buying:

Paper Fixtures—

For Towels and Toilet Paper—Provide an economical service with standard roll paper. Roll cannot be removed until entirely used.

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Glass or Solid Aluminum—Lock prevents tampering with soap. Valve guaranteed non-leaking. Substantial construction throughout.

Floor Brushes—

Equipped with Patented Adjustable Handle—of either Spring or Rigid type. Instantly reversible from side to side or end—no wooden threads to wear out. One handle can be used for many brushes.

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Made entirely of best quality felt. Patented construction prevents spreading, and yet permits ready cleaning. Presents open pliable surface to blackboard, holding dust.

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(Continued from Page 77)

The Economist (Chicago, Ill.)—The leading financial weekly of the Middle West. Devoted to general financial and real estate news. Local circulation.

The Commercial West (Minneapolis, Minn.)—Financial weekly of the twin cities district. Devotes about a page to municipal finance in its own district. Carries some local bond advertising.

The Coast Banker (San Francisco, Cal.)—Leading banking and financial paper of the Pacific Coast. Circulation local. Issued Monthly.

Pacific Banker (Portland, Ore.)—A banking and investment weekly covering Oregon, Washington, and vicinity. Reaches local municipal bond dealers."

The particular form of "ad" that is run in a financial publication advertising a school bond

"Fraser Brown—"Municipal Bonds."

issue is of no serious consequence in itself. All "ads" should give the amount of the issue, the issuing body, the rate of interest to be paid, date bids are closed, date and time of proposed sale, address of authorities in charge of sale where a prospectus may be obtained. Of practically equal importance with advertising is the prospectus which the issuing authorities should prepare concerning the offered issue which may be divided into two major parts which may be divided as follows:

A. General Financial Statement of the Community, and

1. Estimated Value of Taxable Property in the issuing corporate body.

2. Assessed Value of All Taxable Property for preceding year.

3. Per Cent Assessed Value is of Actual Value.

4. Total Tax Rate against community per \$1,000 actual value (including State, County, Schools, Road, Water, and all other special districts).

B. General Information Concerning the Offered Issue.

1. Purpose of Issue (To build what buildings, etc.).

2. To be paid, maturity dates.

3. Rate of interest, plan of payment (optional or callable).

4. Maturity dates, dates and places of payment of principal and interest; denominations of bonds; registry of bonds as to principal or interest.

4. Security of Issue—(Mortgage) other special provisions as setting aside funds to retire bonds from the first school monies collected.

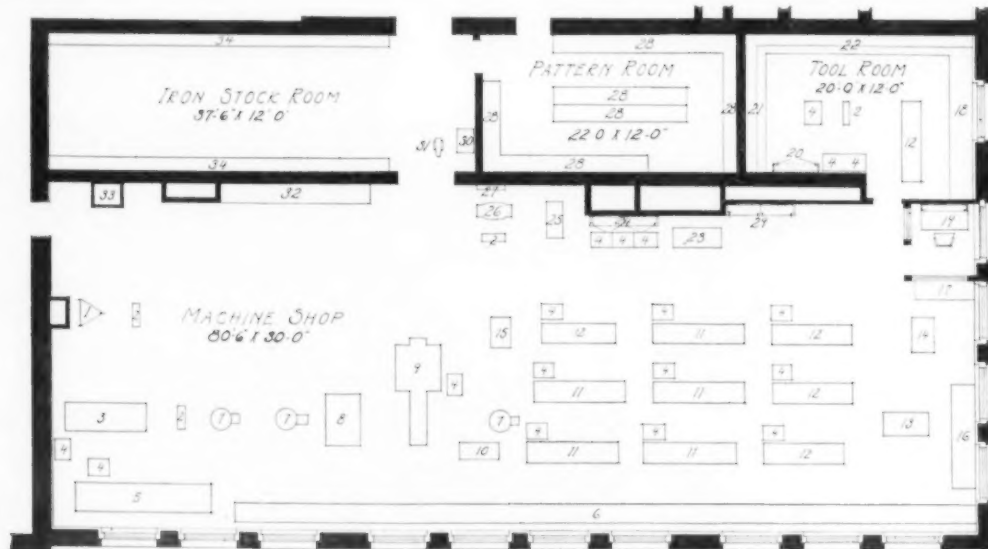
5. Method of bids, forms, amount of money that must accompany bid as a guarantee of good faith, date when checks of unsuccessful bidders will be returned.

6. Who will bear expense of printing bonds and attorney's fees; will trustees or commissioner's fee be paid.

7. Statute numbers authorizing issue.

8. Past record of issuing body in debt assumption; number of issues defaulted, contestations, etc.

(Concluded on Page 144)



WASHINGTON SCHOOL, DULUTH MINNESOTA

Fig. 16. A Model of an Excellent Arrangement of a Machine Shop, Designed for All Types of School Work. Total Floor Area 3,369 Square Feet.

EQUIPMENT SCHEDULE.			
1. Crane 30" x 27"	12. Lathe 7' x 22"	24. Cabinet 6' x 10"	
2. Tool Tray 24" x 9"	13. Milling Machine 4' x 2'	25. Hack Saw 36" x 18"	
3. Drill Press 7' x 30"	14. Grinder 3' x 2"	26. Motor Grinder 36" x 12"	
4. Tool Tray 16" x 24"	15. Grinder 2' 9" x 1' 9"	27. Electric Cabinet 30" x 6"	
5. Lathe 12' x 30"	16. Bench 9' x 2'	28. Racks	
6. Bench 64' 6" x 21"	17. Bench 5' x 22"	29. Cabinet 6' x 12"	
7. Drill Press 30" x 24"	18. Bench 12' 6" x 24"	30. Forge 30" x 18"	
8. Shaper 3' x 54"	19. Instructor's Desk 48" x 30"	31. Anvil 18" x 10"	
9. Planer 9' 3" x 4'	20. Cabinet 4' x 8"	32. Bench 13' x 22"	
10. Drill Press 42" x 18"	21. Cabinet 12' x 20"	33. Sink 39" x 24"	
11. Lathe 8' x 22"	22. Cabinet 18' x 20"	34. Racks	
	23. Lathe 4' 3" x 20"		

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Now is the time to clean up and paint up in your school buildings.

Are your walls and ceilings bright and clean or dingy and soiled?

Are your wooden floors spongy, splintering and wearing away?

Are your concrete floors in halls, basements and toilets dusting and crumbling?

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The white gloss enamel paint for the walls and ceilings of halls and rooms where light reflection is a factor. Cemcoat is mirror like, conserving light and saving lighting bills. Easily washed, of great covering capacity, lasts and stays white longer than ordinary mill whites, as proven by exacting tests. Gloss, eggshell and flat. White and colors.

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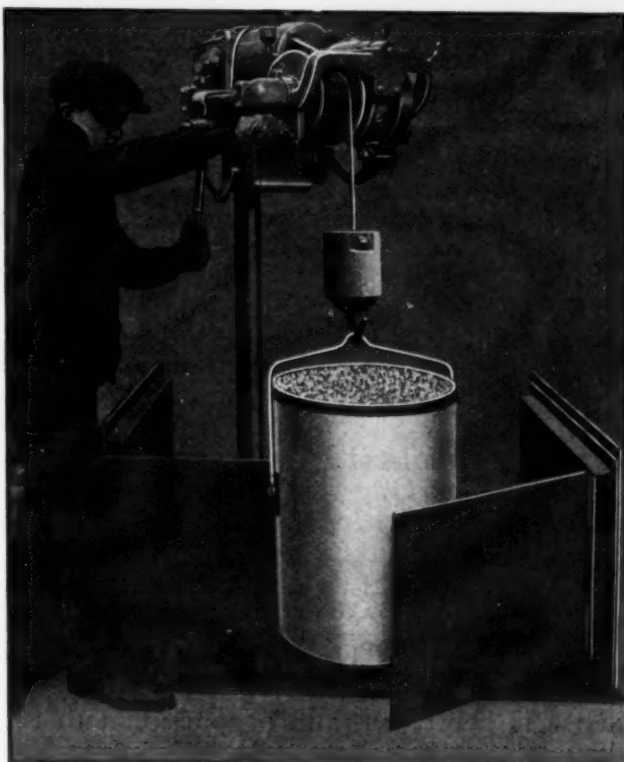
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**AND WITHOUT WORRY,
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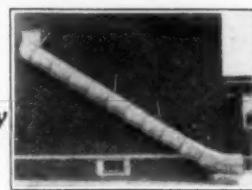
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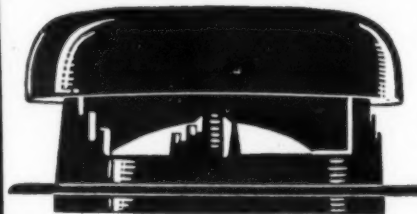
The Potter Tubular Fire Escape is positively safe. No danger of becoming clogged. All the children slide quickly and sure to safety. Smoke, fire or ice never interferes with its use. Besides these safety features no upkeep or repairs are necessary due to the lasting and high grade materials used in their construction. In appearance the Potter Tubular Fire Escape is more attractive than the old iron escape.

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The Knowles Notch Air Diffuser is a proven device, which assures the comfort of the audiences in the balcony as well as in the lower floor.

Fresh air, warm or cool, is distributed with perfect uniformity throughout the entire auditorium, by adjusting the caps of the diffusers and when properly adjusted, the device is locked so that it cannot be tampered with.

Made of Cast Iron from 4" to 10" in diameter. Knowles Notch Air Diffuser can be easily adjusted in recessed notches which cannot slip. Lugs for either wood or concrete floor anchorage.

Knowles Notch Air Diffusers are standard equipment among architects today, and offer a solution to their auditorium ventilation problems.

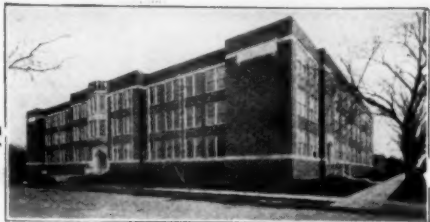
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YOU'LL USE 'EM YET!

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A point worth emphasizing is that their cost is very low, particularly with regard to operation and maintenance. They have no moving parts of any kind and require no supervision in operation. There is nothing to get out of order or wear out!

When you install Midwest Air Filters, you are assured of a dependable supply of **CLEAN AIR** for an indefinite period of years, without replacements or breakdowns.

Won't you let us show you why **MIDWEST AIR FILTERS** will prove the most efficient and cheapest in the long run? Our Filter Data Book tells the story in detail. Write Dept. F-11 for a copy.

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will be completely equipped with
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THE ELEMENTARY SCHOOL BUILDING AS SEEN BY THE ARCHITECT.

(Continued from Page 43)

attached to the larger structure. The school-house itself was designed in a rather solid-looking, plain colonial style, harmonizing well with the pretty suburban dwellings which surrounded it on all sides. The appropriation for this building had been made a year before the contract was let, and as the town had made no elastic provision for the rise in the building market which occurred that year, the architects had been obliged to plan with much economy to keep within the amount. Nevertheless, they had produced a building which included in addition to standard requirements pleasant and well fitted lunch and sitting room for the teachers, a well appointed clinic and a room which could be used for serving refreshments for public entertainments in the auditorium, and a general homelike atmosphere of very unusual quality throughout. The building previously visited had been treated with corridors and stairways of salt glazed brick which were cheerful, easily cleaned and hygienic, but this one had followed the earlier practice and utilized burlap wall coverings painted in cool gray tones and harmonizing with the noiseless linoleum floor coverings.

The architect conducted the party to two or three other buildings, some in process of construction, which he had designed, and on the way back the conversation assumed a rather more social tone. One of the ladies asked Mr. Thumbtack what he would recommend as his ideal of a 600 pupil elementary building, what for example he would do if left entirely to himself and unhampered by any committee. Mr. Thumbtack seemed to consider this as something of a poser and had to think for a while before he began his description. Finally he

said that the elementary school of his dreams would be built in a sort of E shape, that is, a central block with two wings projecting forward so as to enclose a sunny and sheltered court or patio which would be treated like a garden, with seats and maybe a pool. This garden, he claimed, should be under the control of the pupils and teachers and be given as much of a homelike treatment as possible, avoiding all set treatments of the conventional shrubs affected by the usual landscape designers. He waxed rather eloquent about this, but bringing himself back to earth with a start, said that his building would probably have two stories, with a pitched roof of slate or tile and would be very likely to depart as far from the usually accepted rules as he could make it. There would be few and maybe no interior corridors, but all would have long windows admitting daylight and sun. The walls and floors would be of durable, noiseless and sanitary materials, but a distinct effort would be made toward color, light and shade effects, and some money would be set aside and devoted to this purpose. The corridors would also have wide, deep, and sunny bay windows with seats. Perhaps the ceilings would be arched or beamed.

He thought that there would not be a basement, but the first floor would be only a foot or two above grade and there would be play courts, sheltered and probably roofed, but not glazed, where exercising could be done in bad weather. These might conceivably be in several places to avoid too great a concourse in the same one. Somewhere there would be a lunchroom where a few wholesome eatables would be dispensed to prevent the excursions to the corner drug store at recess time, and there would be a place in connection where a tired teacher could get a bite in comparative quiet. The regular classrooms and wardrobes would be much as usual,

except that some of the rooms would have the windows in the form of wide, slightly projecting bays which would afford window ledges about a foot wide which he would fill with white gravel and use for plants. (He had just built some of these in a new junior high school which had been much appreciated, he said, and the committee ought to go and see them).

Then, he thought, the auditorium should be given a great deal of attention. This part of the building is a costly investment and ought to be designed for a variety of services, not only for the school but for community use. The stage ought to be large enough to seat a whole graduating section, or at least a hundred persons anyway, and it should be integrally combined with the gymnasium. There should also be a way to utilize it for dramatics and any sort of entertainment from motion picture shows to large choruses. There should certainly be a place which might take the form of a recess, say five or six feet deep, with a serving counter in front and shelves at the back, and sliding doors to pull down on top of the counter for closing it up.

"What did you say this was for?" interrupted the chairman. "Oh, for serving ice cream and refreshments at entertainments, and it must have a sink for washing dishes," answered the architect, "and then there must be good dressing rooms beside the stage with lights properly placed for the make-up tables and long mirrors."

The members fidgeted a little at this list of conveniences and one said that they were not talking about building a theatre, but this had no effect on the architect's enthusiasm who remembered he hadn't mentioned spot lights as part of his stage equipment.

"It doesn't matter so much what present day requirements are," he said, "it is what is going to be wanted five or ten years hence. I built

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an auditorium ten years ago which was thought to be a wonder of its kind, but now they complain of inadequate stage equipment and are wanting to add all the detail I have mentioned and then some. I know this is just an elementary school and not a high school, but these things will be needed just the same.

"And then, there is the architectural treatment of the outside. I much dislike the elaborate treatment in cheap terra cotta or cast stone, whether Gothic or not, which so many buildings affect. I believe in a simple, direct and hospitable looking building which I would rather do in plain American style than in any imported Gothic or Italian period, and I would pay especial attention to good proportions and a cheerful appearance. I almost forgot to say that I would have a reception room for parents and visitors which would recall something beside a dentist's waiting room, or a section of the subway."

The car completed its homeward trip and the party dispersed with much handshaking and cordial good-byes. If any reader's patience has lasted to this point, he may want to know if the architect got the job. But that, as Mr. Perlmutter would say, is "something else again."

TWELVE YEARS OF SCHOOL BUILDING VENTILATION.

(Continued from Page 56)

With this system in use the responsibility for proper ventilation is distributed among many teachers instead of being concentrated in the hands of the engineer. While equally true that the degree of success obtained in the use of the mechanical ventilation system is a measure of the skill, experience and attention of the operating engineer it should be easier to employ one capable engineer than to secure and constantly maintain the interest and enthusiasm of a group of teachers in the obscure problem of ventilation.

The practical engineer and observer may rea-

sonably feel that, however ideal the window ventilating system may appear in a limited number of cases, its practical operation is fraught with many difficulties. Certain it is that no one can guarantee uniform, regular or consistently successful ventilation by means of this system.

(To be Concluded)

THE SIZE OF CLASSROOMS.

(Continued from Page 60)

ditions and with the Courtis tests again. The rate of improvement in ability in arithmetic was not conditioned by size of classes. In 1922, twenty fifth grade classes in Revere were tested in arithmetic, the Courtis tests being used. The classes ranged from 28 to 49 pupils. Large classes showed as good results as small ones. The size of the classes showed no effect on the quality of the work.

The results of other experiments could be given tending to show that small classes do not promote efficiency in educational results. In spite of evidence to the contrary the popular notion persists that educational efficiency demands small classes and it persists to such an extent that school committees are reducing the size of the standard classroom.

It is a self-evident fact that as the size of the class decreases the per pupil cost of instruction increases. It is an administrative impossibility to seat the majority of classrooms to their maximum capacity. If the room capacity is 48 pupils the average room membership for the school year is approximately 44, and if the capacity is 40 the average membership is approximately 35 pupils.

Consider the following case of two classes in the same school system, one of 35 pupils and the other of 44. The teachers' salaries are \$1500. The per pupil cost in the smaller class is \$42.85 in the teaching item. In the larger class it is \$36.36. Here the difference in cost of teaching per pupil is \$6.49 a year. In a city having 10,000 elementary pupils the adoption of a pro-

gram of 40 seats to a room instead of 48 would make a difference of approximately \$64,900 a year in the item of teachers' salaries alone.

A reduction in the size of classes automatically increases the number of teachers required. Teachers' salaries constitute from 65 to 75 per cent of the total of current school expenditures. In Revere for the year ending June 30, 1923, teachers' salaries amounted to 75.4 per cent of the total.

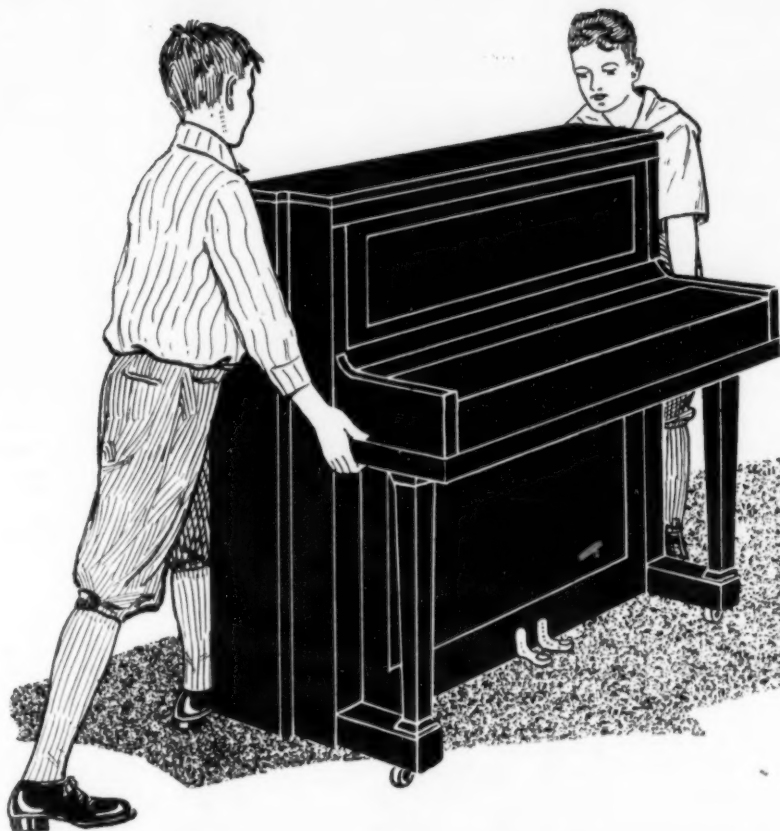
With the tremendous increase in the total cost of schools it becomes the duty of every superintendent and school board member to consider carefully whether the increased expense involved the adoption of a smaller class policy is justifiable. The evidence (and it is reliable evidence) proves that it is not justifiable.

The fact that the cost of a single schoolhouse is less on a 40-pupil classroom basis than on a 48-pupil basis is not a good argument. A twelve room school building on a 48-pupil basis has a maximum capacity of 576 pupils. A fourteen room schoolhouse on a 40-pupil basis has a maximum capacity of only 560. The twelve room building will take care of more pupils than the fourteen room building, and the salaries of two teachers (about \$3000) will be saved annually.

The fact that the weight of opinion favors the idea of small classes is likely to be given undue consideration and to have too much importance attached to it. The fact that an idea is well established by wide acceptance and long usage is not a valid argument in favor of it when subjected to scientific treatment. The ancient belief in the flatness of the earth, the generally accepted theory that yellow fever was spread by contact, and the almost universal belief that the law of gravity made it impossible for man ever to perfect a flying machine are a few of the many majority opinions that have had to give way in the face of facts and investigation.

(Continued on Page 143)

Better school music at smaller cost—



A Portable Miessner on each floor takes the place of a larger piano in every room

The small Miessner Piano is recognized by music educators as the perfect piano for the school room. The 6,000 of these pianos in use in schools are giving daily satisfaction.

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The Miessner is built by W. Otto Miessner, music educator of national prominence. It is a new instrument, not merely an old piano cut down to 3 ft. 7 in. in height. New and advanced principles in piano construction are embodied in the Miessner. It was the first small piano and today leads its field in perfection and development. Standard keyboard. Full 7 1/3 octaves.

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Send me, without obligation on my part, a copy of your descriptive booklet on the Miessner Piano in the school. Also your special prices to schools and details of your ten-day free trial plan.

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Address.....

City..... State.....

School.....



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No longer does the daytime use of slides demand the light conditions of a night school. No longer is it necessary to shut the pupils in darkness where eye-strain is sure and lecture notes impossible.

Mail the coupon today to get the story of Daylight Projection.

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Please send me the illustrated booklet explaining Daylight Projection and its uses in Class Rooms.

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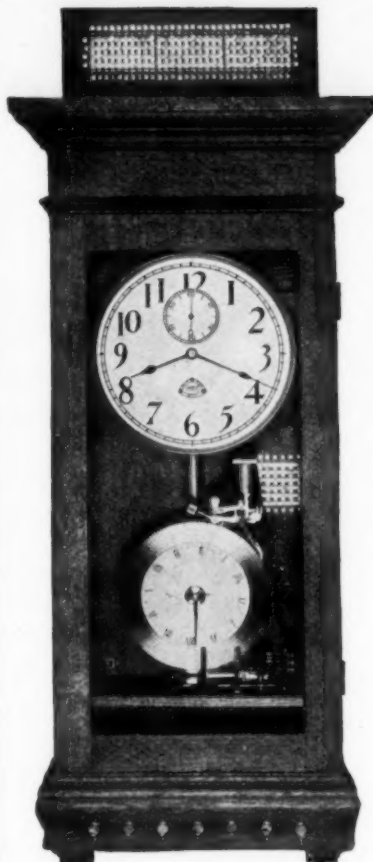
Save Time and Confusion in School with

Federal Standard School Telephone Systems

THIS Company brings the experience of 23 years in the manufacture of Telephone apparatus to the special problems of installing School Telephone systems. The lasting efficiency of Federal Standard telephone systems is known the world over.

Samples and Complete Quotations to meet your requirements will be submitted on request.

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Electric Clock Systems

Our equipment is most simple, economical and reliable.

We can supply the needs of the small school as well as the large one, at prices in proportion.

There is no reason why your school should not have a suitable system of this kind.

Some users:

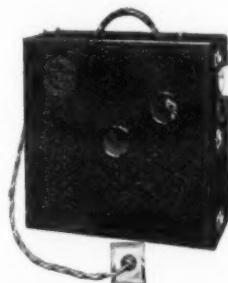
Board of Education, Philadelphia, Pa., 125 installations;
Board of Education, Baltimore, Md., 15 installations;
Board of Education, Butte, Mont., 7 installations;
Board of Education, El Paso, Tex., 5 installations;
Board of Education, Durham, N. C., 2 installations.

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The modern demand in the school using motion pictures is for portability.

The projector they use must be versatile—it must serve to graphically portray lessons in the classroom and the auditorium—to entertain at the teachers and parents meetings and in many other ways it must serve its purpose of showing clear, brilliant motion pictures anywhere, at any time.

This is what recommends the DeVry for church use—its extreme portability.

But in the portability of the DeVry nothing has been sacrificed. Throughout it is as fine or finer in workmanship than any of the large professional projectors.

How other schools are using DeVry's is told in our booklet, "Motion Pictures in the School." We are holding a copy for you. Mail the coupon below.

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DRAPER'S ADJUSTABLE WINDOW SHADES

can be adjusted to suit the conditions in the schoolroom as they actually exist. They are guaranteed to give a maximum amount of light and yet exclude the bright rays of the sun.

Draper's Adjustable Window Shades are of simple construction, positive in action, and absolutely foolproof. The operation is so simple and easy that any child can adjust a Draper shade.

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Meet Every School Requirement

Use the
Norton
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Door Closer
with
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and do away
with door stop
on bottom
of door.



WHY Is The NORTON Closer With Hold- Open Arms the Best Suit- ed for Schoolhouse Work?

1st. The doors are closed with a uniform speed, which gives the pupils a chance to go through a door without getting caught or injured.

2nd. Having two speeds, the speed at the latch can be set for

absolute quiet—no latch necessary.

3rd. The Hold-Open Device connected with the arm of the Door Closer is automatic, a child can operate it—just a push or pull on the door is all there is to do it. Does away with door stop, hook or strap to hold the door open.

Every school-room should have one.

Service:—We have expert service-men on call, free of charge.

Price:—The price is right.
Send for a representative.

THE NORTON DOOR CLOSER CO.

2900-2918 N. Western Avenue,
Chicago, Illinois.

(Concluded from Page 140)

Up to the present time teachers and school administrators have been concerned largely with problems of perfecting the educational processes and of extending educational opportunities. If a thing has been justifiable from an educational point of view, then its cost has been justified and has been considered an investment. The time has come when one other factor must receive consideration and that is the ability of the communities to pay.

Because of the large percentage of the total cost of education that goes into the item of teachers' salaries it is evident that no other single reform will result in such immediate and substantial financial saving as the adoption of the policy of large classes. In the long run the lessened "per classroom" cost of construction of small classrooms in a schoolhouse building program will be a very small item when compared with the greater "per pupil" cost of instruction; and the per pupil cost of instruction is an annual cost that continues for as many years as the schoolhouse is used.

Dr. Leonard P. Ayres, one of the greatest American educators, offers the following suggestion: The time is rapidly approaching when the expense of supporting public education is going to eat up the incomes of our municipalities so that they will be unable to finance their other activities. The truth is that in America we have determined to give all people access to free public education until they become adults, but we have not thought of any way to pay for it. More research should be done in the planning of buildings and in their intensified use."

School boards and school administrators are demanding that the school department be made financially independent of the city government. and in many parts of the United States the school department has been given financial in-

dependence. The future welfare of public education in America makes it necessary that everyone connected with the public school system shall do his part to see that the public is given a hundred cents' worth of efficiency for every dollar of the school budget.

A SOUTHERN HIGH SCHOOL.

(Concluded from Page 61)

equipped to accommodate a like number of pupils.

A program clock has been installed with three circuits—one each for the elementary and high school departments and one for recesses. Each room contains a secondary clock and a buzzer. The buzzer is placed on the inside of the secondary clock.

A COMPLETE COMMUNITY HIGH SCHOOL.

(Continued from Page 70)

The home economics department on the first floor is exceptionally well arranged and completely fitted up for instruction in sewing, cooking and other household activities. The cooking laboratory has adjoining it, a model dining room, as well as a large pantry for the storage of food supplies. The lunchroom which measures 52 feet by 35 feet is unusually large for a building of this size. It is, however, not too large, considering the fact that 300 or more lunches are served daily in two periods. The room seats 120 children at one time. It is fully equipped with dish washers, potato peelers and other time-saving restaurant equipment.

The biological laboratory serves for instruction in agriculture, and the adjoining recitation room is used for the same purpose.

The second floor is given over to the academic studies and the laboratories. The study hall which measures 91 feet by 35 feet and contains 250 seats, is on the south side of the building, where it receives a maximum of sunlight. On

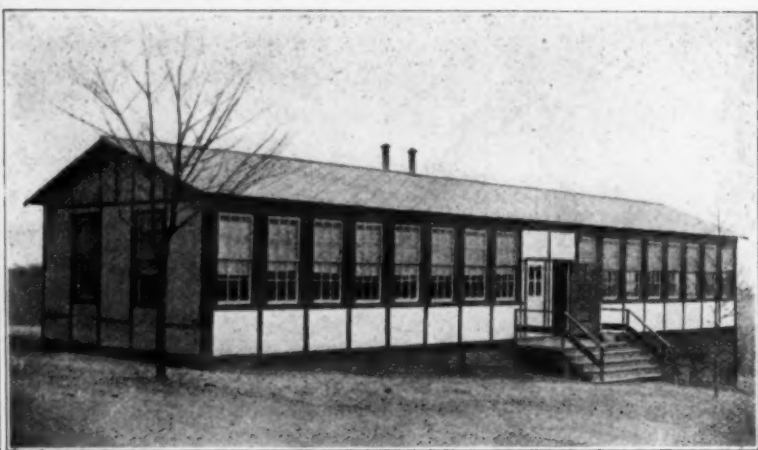
the west front there is a science lecture room, a physics and chemistry laboratory, and two apparatus rooms. On the north side of the building there are three recitation rooms and two large rooms for the business department. The east end of the building contains two large classrooms and six recitation rooms which are at the present time unfinished and are intended to meet the needs of the normal increase in the enrollment of the school.

Not the least interesting feature of the plan is the extremely economical arrangement for circulation through the corridors and on the stairways, and for the entrances and exits. This feature of the building has been especially studied by the architects to afford not only minimum travel distances between the various departments but also to insure ease of access to rooms which will be used by other than the pupils and to give a maximum of light and ventilation in every nook and corner of the building.

The building is heated by means of two Kewanee smokeless boilers, operating a split system of heating and ventilation. The large fans deliver 35,000 cubic feet of air per minute to the building. Space has been provided so that the building can develop its own current for lighting if this should prove desirable.

The building has at present completed cost \$273,361.98. Figured on the basis of cubic content this cost is 27.3 cents per cubic foot. Figured on the cost per pupil accommodation including the entire equipment and the architects fees the cost is \$480. Figured only on the cost of building without movable equipment the cost is \$411.50.

An examination of the building on the basis of the candle efficiency shows the following distribution of space.



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Easy to erect. Shipped in sections, ready to bolt together. You can erect these schools in Winter or Summer. Window and Door Sections are complete, ready to erect. Sections are all interchangeable. ONE, TWO or any number of rooms.

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WHAT DEBTS MAY BE FUNDED BY MUNICIPALS?

(Concluded from Page 44)

of the people to raise the funds to meet the indebtedness created by such action, in the majority of instances not accorded until the proposition involved is submitted to and approved by a vote of the electors * * * whose tax bearers are to be affected thereby, and hence, agreeably to a well-established rule, is to be strictly construed, and where there is any doubt, it must be resolved in favor of the public or taxpayers."

One of the most frequently debated questions on the subject of power to fund municipal indebtedness has related to the scope of the term "floating indebtedness," within the meaning of statutes authorizing the funding of such indebtedness. In one of the latest controversies on this point, the Colorado Supreme Court decided that outstanding judgments constituted "floating indebtedness." (Thos. S. Hayden Realty Co. vs. Town of Aurora, 163 Pac. 843.) The court adopted the following dictionary definition of the quoted term:

"A debt which is of a temporary and shifting nature, that is one not funded; (a) in general, a debt for money borrowed directly, for money owed for miscellaneous obligations, or for money payable in a short time."

In the case of State vs. Faran, 24 Ohio St., 536, the Ohio Supreme Court held that the term "floating debt" was doubtless used in certain legislation to distinguish the indebtedness to be provided for from the bonded debt of a city, "which is in its nature fixed and, for the time it has to run, permanent."

And in the case of People vs. Wood, 71 N. Y. 371, the New York Court of Appeals defined a "floating debt" as "that mass of lawful and valid claims against the corporation, for the payment of which there is no money in the corporate treasury specifically designed, nor any taxation or other means of providing money to pay, particularly provided."

In a Michigan case (Port Huron vs. McCall, 10 N. W. 23), the Supreme Court of that state adjudged that a judgment was an "evidence of indebtedness" such as could be refunded under authority of a certain statute.

But it seems that the Louisiana Supreme Court has decided that the term "floating debt" does not comprehend a judgment against a city. (5 McQuillin on Municipal Corporations, 4826).

In Stone vs. Chicago, 69 N. E. 970, the Illinois Supreme Court determined that borrowing money on a bond issue to raise funds to discharge judgment indebtedness was authorized by a statute permitting the issuance of bonds for corporate purposes, and that a judgment was an "evidence of indebtedness issued for money," within the meaning of a statute authorizing funding of such indebtedness.

Refunding a debt does not exhaust the power to issue new bonds on account of the debt, in

the absence of statutory limitation, according to the decision of the Iowa Supreme Court in Heins vs. Lincoln, 71 N. W. 189. The court declared that no precedent had been cited which would warrant a holding that a statute which expressly empowers a city to fund its debt or bonds, and which does not undertake to limit such right or power, applies only to bonds which have not already once been refunded.

MARKETING SCHOOL BONDS.

(Concluded from Page 136)

9. Date bonds will be dated. Date from which purchaser must pay interest to issuing body; in what specie will bonds be paid for, check, cash, etc.

10. Date, hour and place of sale.

Very good examples of an advertisement and prospectus concerning a school bond issue are those presented by the board of education of Fort Smith, Arkansas, 1922. Some of the data included in this prospectus may seem exceedingly simple but such is not the case. For example, the term "bonded indebtedness" may mean net debt, gross debt, against the issuing body only while the territory occupied by it may be coterminous with from one to three other corporate bodies. For instance, a community incorporated as a school district may also be incorporated as a city water district, improvement district, etc. The bonded debt statements of communities have for long been the bane of the bond attorney's existence. In the majority of the state the maximum legal debt limit is some fixed per cent of the assessed valuation. While it is true that debt limits operate separately and not collectively on corporate bodies that are coterminous it is evident that there is possibility of many discrepancies in determining debt limits in actual sums. From these examples it is obvious that absolute accuracy concerning these factors is possible only by long, careful and searching investigation.



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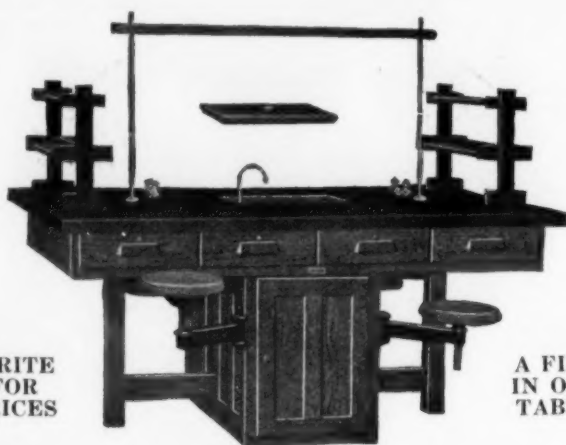
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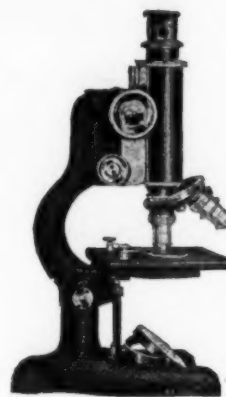
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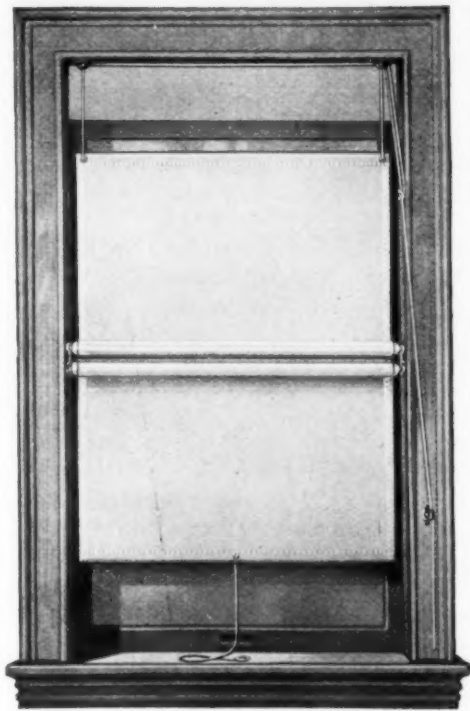
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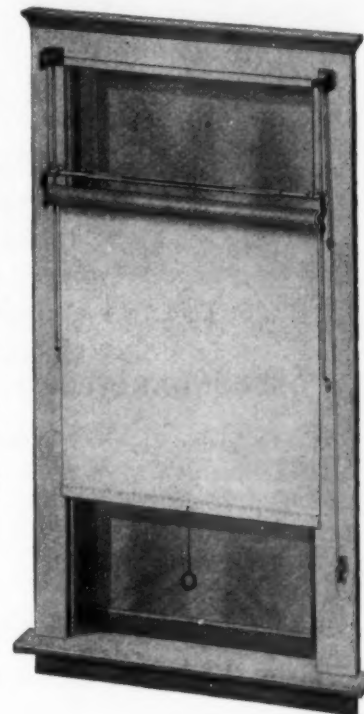
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By Harlan Cameron Hines. Cloth, 146 pages. Price, \$1.20. Published by Houghton Mifflin Company, Boston, New York, Chicago, San Francisco.

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Professor Hines is aware of the need of clear and definite terminology for the successful carrying on of a discussion. That is the reason why he opens the monograph with the definition of intelligence. There is lack of agreement on the question. After quoting the definitions of Stern, Herman, Colvin, Pintner, and Haggerty, Professor Hines for the purpose of establishing a working hypothesis takes intelligence to mean "the capacity (native ability plus training) of an individual to adapt himself to a new situation" (p. 11). Training is

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accepted in the broader sense of school training as well as training secured in the home, particularly during the time between birth and the first attendance at school.

The discussion goes over to explain the instruments for measuring intelligence, beginning with the first Binet Scale in 1905, its revision in 1908, the tests devised by Terman, and others. The difficulty encountered in applying the individual scales led to the introduction of group tests, such as the army tests, the group tests for schools and colleges, and the Voelker and the Liao character tests.

Discussing the use of the instruments Professor Hines declares (p. 30) that "it is assumed that the most important problem in intelligence testing is the location of the feeble-minded, i. e., those individuals who are not capable of normal mental development. . . . To test feeble-mindedness in its varying degrees requires the use of an intensive individual examination." The Stanford-Binet has been accepted as the most reliable revision of the Binet Scale for American use, because it is an intensive individual examination. The problems this test includes have been designed primarily to test native intelligence and "not school knowledge or hometraining. How much the child has learned is of significance only insofar as it throws light on his ability to learn more" (p. 31). Group tests are not as accurate as individual tests, but had to be resorted to because of lack of time and difficulty of proper application rendered them unserviceable for more general and quick results. They serve the purpose of general classification of pupils.

An effective point is made by the author against those who have disparaged intelligence tests by clearly stating the reason. If, "Instead of trying to read into these tests characters which they do not possess," he writes, "we simply state that the test divisions test what is evident, and nothing more, the atmosphere surrounding them will be greatly clarified."

We are in agreement with this statement. Too much has been inferred by hasty theorizers and the uninformed and conclusions have been drawn from the tests which go beyond scientific exactness. It is extremely difficult to make a

complete analysis of any human being. The tests so far devised do not make such a complete analysis. This, however, only proves that we are still far from the desired perfection but does not prove that we are on the right road. The exact investigator and qualified examiner may safely conclude to those which the intrinsic nature and character of the tests reveal. It is partly due to the limitations of the present tests, partly to other factors and causes which scale the results, that leaves much to be done before we can assert that we can do everything we want with these tests.

That good results have been obtained when tests were made by trained examiners cannot be denied. Perhaps not least among them is this "that intelligence tests have made it possible to classify school children with more assurance and to bring about a higher degree of fairness to the individual child." That is a temperate statement.

The attitude the author takes in the relation of measurement of intelligence with the aims of education may be expressed in his own words, (p. 88); "the aim of modern education is to relate school training to life." This statement in itself would be too vague to be of practical value did not Professor Hines make an effort to enter into detail. He does so by quoting the four factors emphasized by McMurry. These four factors are: (1) the teacher should inculcate objects in life or purpose on pupils; (2) the children should be taught to become constant students of the worth of things in order to prepare for their more immediate and future lives; (3) the children should be taught to organize or systematize their ideas; and (4) the pupil's ability to act as a leader, whether in his own affairs or in the affairs of others, should be developed. In order to avoid the accusation that he is exaggerating as to the fourth factor, Professor Hines qualifies his meaning when he writes: "Until it becomes evident just what specific aid and direction should be given, it is important that each school child be impressed with the idea that he must go as far toward the top of the ladder as his capabilities will carry him," (p. 93).

The last section of the monograph is devoted

to a discussion of the much debated relation of measurement of intelligence to democracy of education. The author considers and weighs the arguments offered by both sides, quotes amply from the adherents of each side of the question, and supports, refutes, or reconciles the views to his own. He asks the question: "If it (intelligence) is the capacity of the individual to adapt himself to new situations, and this 'general factor' has been subjected to measurement by instruments partially standardized and yielding limited values, are the plans proposed by psychologists for the reorganization of schools and the reclassification of school children justifiable?" He answers this question as follows: "Within certain limitations, the writer holds that they are. They are when it is admitted that intelligence has been tested insofar as integral parts of it have been tested. They are when it is understood that all of a child's various mental abilities and some of his 'human and moral qualities' have not been measured by these instruments, and when these qualities are included in establishment of standards for reclassification. They are when the instruments are administered by persons who understand them perfectly and who are able to interpret the results in light of the facts assembled. But they are not when the instruments are employed to produce evidence of correlation between elements in which there is no relationship; and they are not when the instruments are employed to make deductions concerning traits over which the 'controlled conditions' of examining hold no sway." (pp. 137, 138)

This may not be an adequate appreciation of the monograph. But what has been said shows that it is worthy of attentive perusal. It will help to dispel much vagueness of thought, will remove undue prejudice, and will establish a better understanding about the issues at stake. It is as fair and well-thought-out a presentation of the question as we have yet read.

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(Concluded on Page 151)

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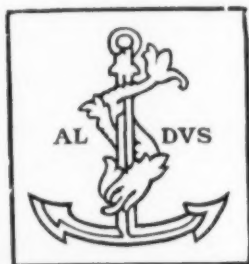
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(Concluded from Page 148)

within the easy reach of a volume a selected number of readings that are meant to give the views of the best writers in psychology. These selections have been made from any sources. In the table of contents appear names familiar to every psychologist, such as Karl Pearson, Edward B. Titchener, Edward L. Thorndike, Knight Dunlap, George T. Ladd, William McDougall, Robert S. Woodworth, John B. Watson, J. McKeen Cattell, Francis Galton, C. Lloyd Morgan, Walter S. Hunter, C. Judson Herrick, James Sully, Th. A. Ribot, James R. Angell, Morton Prince, Charles H. Judd, and a host of others.

The joint authors have patiently chosen from their vast and extensive study what they considered most pertinent to the purpose of the volume. This purpose, as the preface states, lies "in the belief that the student beginning the study of psychology can profitably read much more material than is commonly assigned him. It is hardly the purpose of a first course to train the student to such a point that he can read the technical articles of the psychological journals, but he should have enough practice to enable him to read with intelligence the more general literature of the subject, whatever its point of view. But the accomplishment of this latter purpose is becoming increasingly difficult." The volume before us is meant to aid in effecting this purpose.

The purpose is a laudable one and will find a grateful response from many a professor of psychology who desires the student to get a more comprehensive view of the whole field. It is a much desired objective that the mind be broadened by more extended reading than one or two volumes can offer.

That is all well and good. From this viewpoint we have nothing but words of commendation for the authors.

However, the doubt naturally arises in our mind, that the beginning student, unless more mature and discriminating than the usual run, will very likely rise from the reading of the volume with confused ideas about many important questions. Where so many divergent views are presented to his young mind, it can hardly be otherwise than that he will get a smattering of information but not well-digested knowl-

edge. This difficulty could be obviated to some extent by the wise direction of the professor who knows the field, is thoroughly conversant with the views of the various writers, and is able to separate the facts from mere opinion or unproved guess.

The reviewer, who is a psychologist himself and has given much thought to the subject and has read extensively, cannot but regret the one impression in his mind as he reads the present volume. The thought is this, that the over-emphasis of present-day science on the experimental method to the exclusion of all other methods of arriving at facts that do not submit to the experimental method, has rendered science one-sided and inadequate. We welcome most heartily every advancement science makes and accept every new fact it brings to light; but we disagree with the conclusion some scientists have drawn that nothing is worthy of consideration by science if it cannot be handled by experimentation. Such procedure is narrow and forecloses the possibility of discovering the whole truth.

The harm done by this confining attitude is twofold: it quite clearly disregards facts that are not material, and secondly imperils its claim to accuracy by not relating one set of facts with other sets of facts that bear on the case.

Most, if not all, the selections in the volume discussed are taken from writers to whom man is only a highly complex organism, interesting always, but baffling in its manifold reactions. However, the sincerely enquiring psychologist cannot but ask the question: Is that the whole of man? The general reader of the selections, gathered so painstakingly from many sources, will come to no other conclusion than the one indicated. It is this consideration which influences the reviewer to temper his appreciation of the authors' efforts with a note of sincere regret that they have followed the narrow attitude of science in considering only one set of facts about man and wholly neglecting the other set of facts, the spiritual facts that make what he is and capable of such remarkable achievements.

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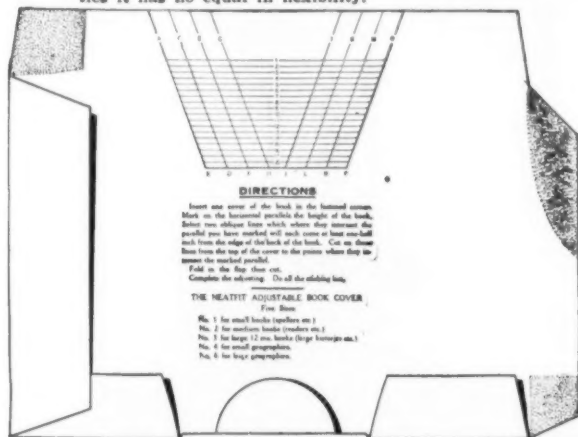
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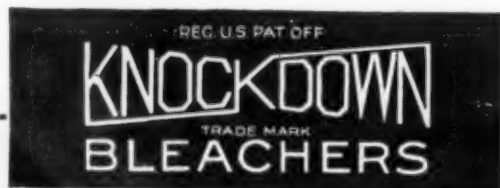
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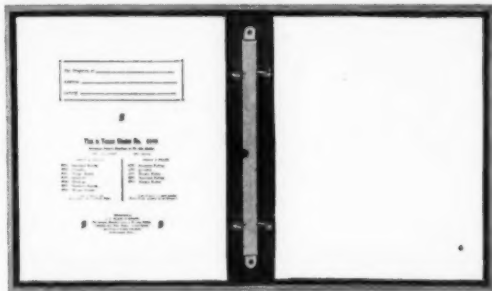
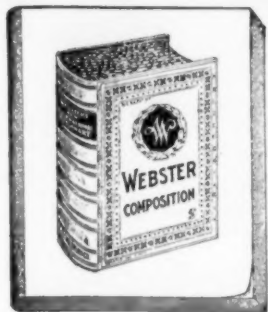
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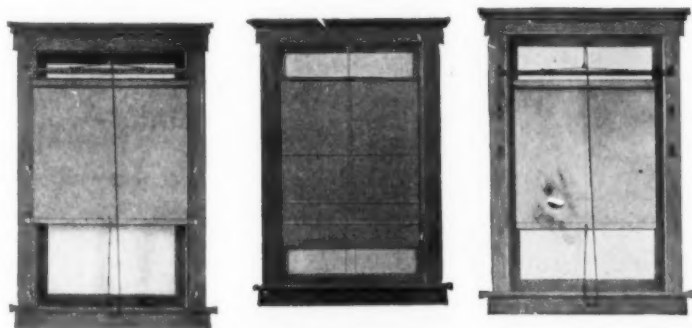
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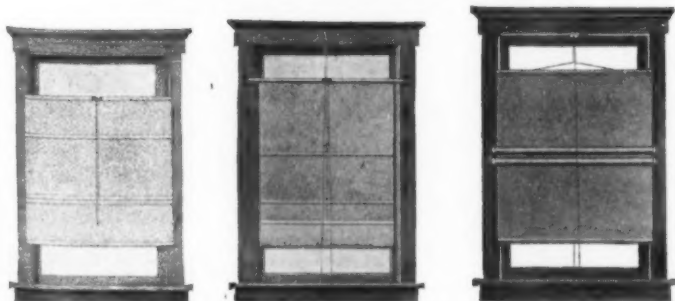
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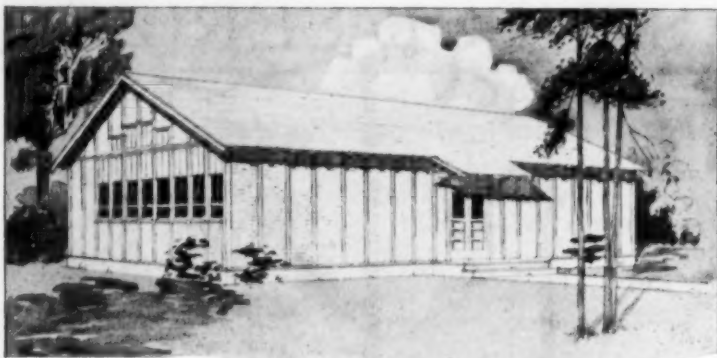
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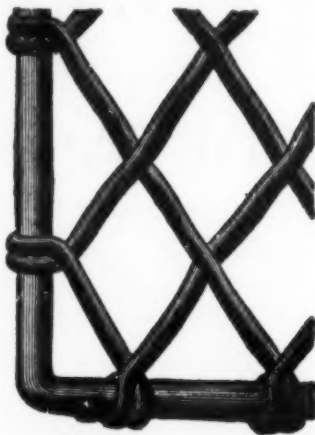
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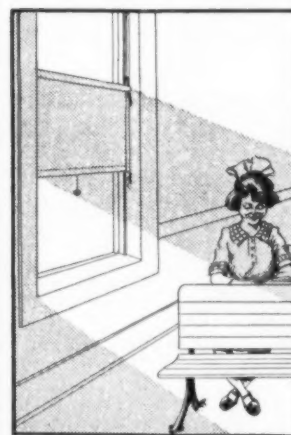
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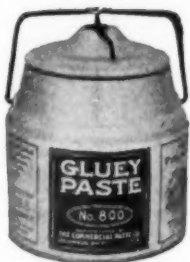
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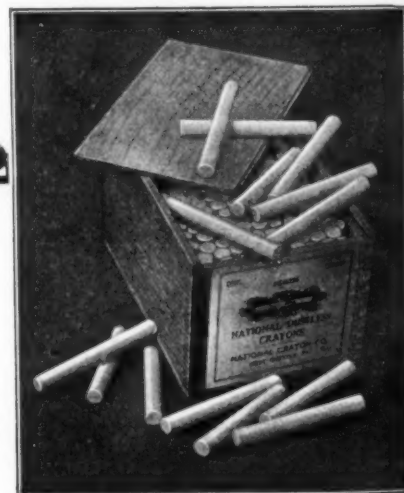
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"How would you organize a course in drawing and design for Industrial Art Students?"

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"What new craft problems related to costume and interior decoration could you suggest for high school girls?"

From the Pacific Coast:

"Can you help me plan school room decorations which my fifth grade could make for this special occasion?"

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"Could you suggest a tentative plan for art work through the year for Junior High School boys?"

And from the East:

"What course would you pursue in giving out work to deficient children who have a feeling for color and design?"

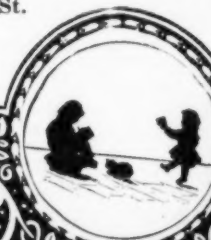
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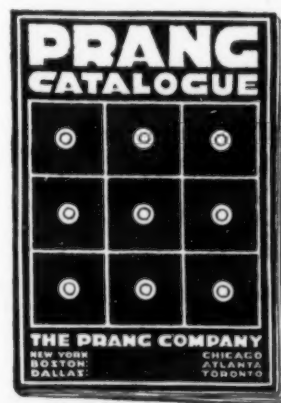
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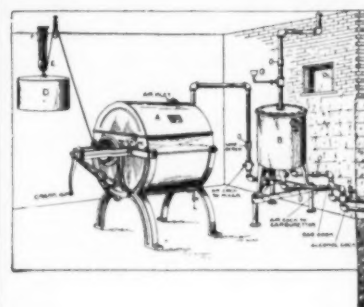
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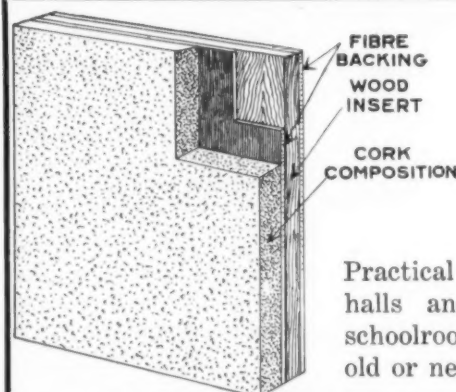


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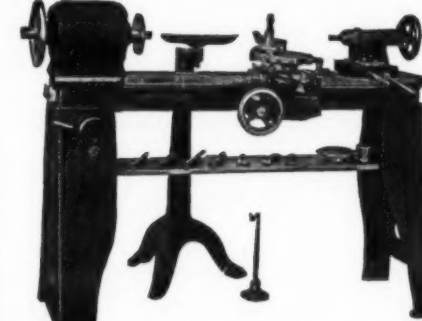
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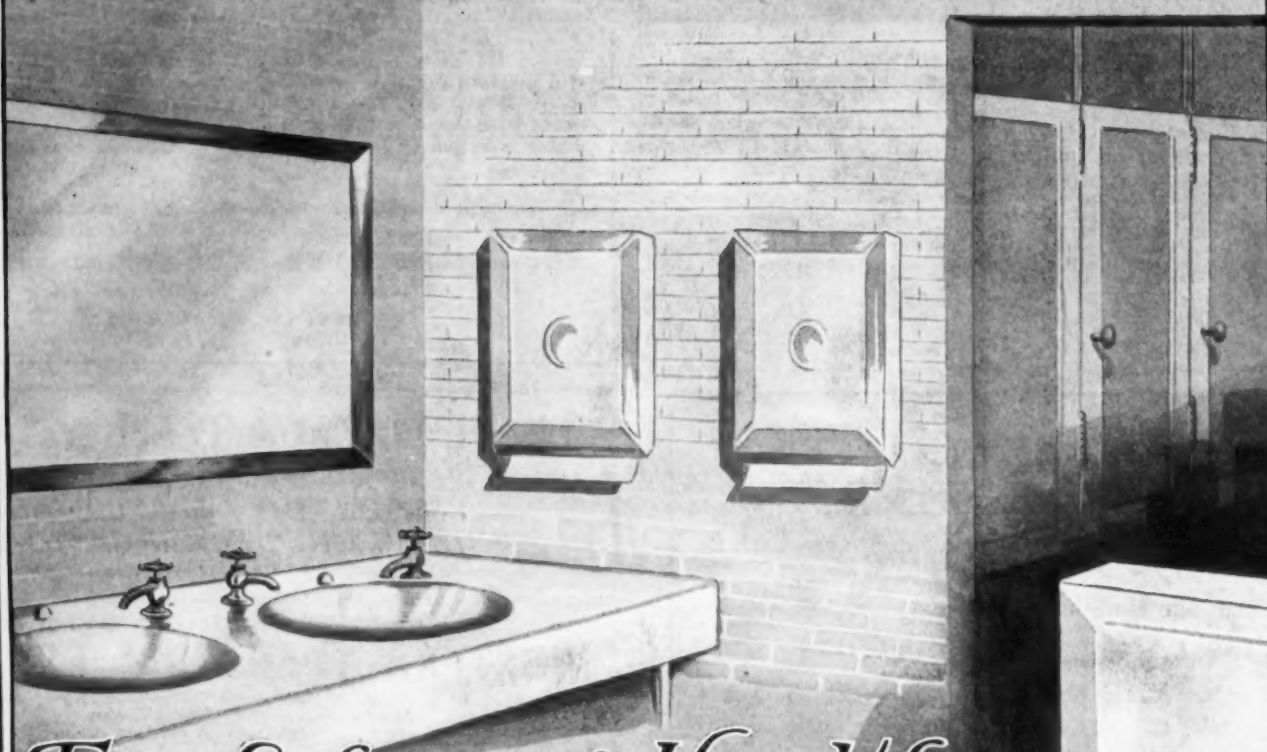
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For Life and Health

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AFTER THE MEETING



Irvin Cobb's Symposium On Education

Education week in November caused Irvin Cobb, writing in the New York Sun, to retell a group of old stories which hinge on spelling, grammar, etc. The symposium begins with the classic of the traveling man, somewhat under the influence of something stronger than water, who wobbled up to the house stenographer in a Cleveland hotel and asked her to take a letter. The young woman squared away for dictation and he groggily began:

"Dear Friend Wife: I have been delayed on this trip longer than I expected. Don't look for me home for another week. I've got to go to Dowagiack."

The typist looked up from her typewriter.

"How do you spell 'Dowagiack'?" she asked.

"Do you mean to tell me," he demanded, "that you can't spell the name of a thriving town like Dowagiack—a name which should be familiar to every one?"

"I'm afraid not," she said. "Please spell it for me."

He started, slowed up, stopped, then started again and finally came to dead halt.

"Never mind," he said, "make it Kalamazoo."

Under the head of grammar comes the somewhat elderly anecdote of the purist who said to the farmer:

"I notice you speak of your hens as 'setting.' Do you mean when a hen goes on the nest that she sits or that she sets?"

"Friend," said the sturdy agriculturist, "that point don't give me worry. But when she comes off the nest and starts cackling what I want to know is did she lay or did she lie?"

During the recent New York City Silver Jubilee an aviator answered an advertisement that had been inserted in the papers by one of the directors of exhibits.

"Before we go ahead and talk contract," said the director, "I want to know if you're a good speller?"

"What difference does that make?" asked the candidate. "I know how to fly—isn't that sufficient?"

"No, it isn't. We want a man to do smoke writing on the sky and the last one I hired went up twelve thousand feet and then came down to find out how to spell 'jubilee'."

The next story is furnished by Irving Bachelier, the novelist. He used to live in St. Lawrence county, the most overwhelmingly Republican county, population considered, in the state of New York. He says that in his village back in 1884, there was but just one lone Democrat. When the returns showed that Cleveland had been elected President, the solitary Democrat held a ratification meeting all by himself. He went up and down the one street of the hamlet, whooping loudly and bearing a banner upon which he had lettered the following inscription:

"Educashun Done It!"

This collection would not be complete unless we concluded with the ancient and honorable tale of the policeman who found a dead horse lying on a street corner. Under the rules he was required to enter the fact in his notebook. He got out the book and then remembered that this was the corner of Terpsichore street and Kosciusko Boulevard.

So he put the book back in his pocket, rolled up his sleeves, spat on his hands, took deceased by the tail and dragged his remains two blocks east to the corner of First and Elm.

Ask the Clerk—He Knows

Last winter an association of college professors held a convention at one of the Chicago hotels. In one of their meetings the discussion waxed warm and they finally decided to settle the disputed point by referring to the encyclopedia. Two of them went down to the desk to ask the clerk if a copy of the much-needed book was available.

"May I inquire if you have an encyclopedia?" said one of the professors, looking benevolently over his glasses.

"No, I am sorry we do not. But," solicitously, "what is it you want to know?"

Nature Class.

Teacher—Now, Junius, can you tell us what a primitive forest is?

Junius—A primitive forest is a place where no human hand has ever set foot.

Sharp Boy.

A teacher was giving his class a lesson about the Great Forest.

He asked: "Which boy can tell me the pine which has the longest and sharpest needles?"

Up when a hand in the front row.

"Well, Johnny?"

"Please, sir, porcupine."—L. H. Journal.

Mistake, Beg Pardon.

Teacher: "I am surprised at your not knowing the date of Columbus' discovery of America. It's actually at the head of the chapter."

Young hopeful: "I'm sorry. I thought it was his telephone number."—L. H. Journal.

A student annoyed his master by asking foolish questions.

One day, after he had interrupted the lecturer several times with irrelevant remarks and questions, he asked: "Sir, how long can an animal live without brains?"

"Well," was the reply, "I really don't know, Mr. F—. How old are you?"

The inspector was examining the boys concerning the story of David and Goliath. He had been describing the parts of Goliath's armour, and asked, "Now, boys, what was it Goliath forgot to do?" expecting as the answer that he had forgotten to close his visor.

The reply was: "Please, sir, he forgot to duck!"

Schoolmaster: "Jones, spell 'weather'."

Jones: "W-e-t-t-h-e-r."

Schoolmaster: "Well, that's certainly the worst spell of weather we've had for some time."

Explained

The superintendent of a Sunday school in the East-end of London tells the following story.

Each Sunday a scholar is invited to select his favorite hymn to be sung by the whole class. One small Cockney, when asked to make his choice, perplexed the teacher by announcing that he wanted the hymn about "the little Yiddisher boy pinching the old man's watch."

On being asked for an explanation, he turned up his hymn book and pointed out the lines, "And while the ancient Eli slept, His faithful watch the little Hebrew kept."

Teacher—"Every day we breath oxygen. Willie, what do we breath at night?"

Willie—"Nitrogen."—Science and Invention.

Teacher: What keeps the moon from falling?

Pupil: The beams.

No Experience

At the club they were talking of germs and germ carriers. One member maintained that kisses carried germs. Another considered paper money the chief offender.

"Your opinions are merely vague guesses," declared a third. "What have the scientists found out on the subject?"

Nobody knew. A college professor drifted in and they called on him.



"We were discussing germ carriers, professor. What do the scientists have to say about kisses and paper money?"

"Kisses and paper money, eh?" echoed the professor. "The average scientist has had little experience with either."—Chicago News.



NEWS OF MANUFACTURERS.

The Largest American Flag. Annin & Company of New York City recently completed the largest American Flag ever made. It measured 90'x150' and contained 13,500 square feet of material. The stripes were seven feet wide and the stars five feet high. Ninety people were employed thirty days in making the flag. About seven and a half miles of thread were used in sewing the various stripes of material together.

The average flag displayed on a residence measures about 4'x6'. The flag just described would make over 500 flags of this size.

Annin & Company had special bunting made to order for this flag, the red stripes measuring 42" wide and the blue stripes 48" wide. In ordinary flags the bunting is usually 18" wide and if the large flag had been made of this type of material, 3,000 yards would have been required.

The flag was displayed on Armistice Day in the city of Detroit.

TRADE PUBLICATIONS

New Furniture Catalog. The Columbia School Supply Co., at Indianapolis, Ind., has just issued its new fall catalog for 1923, describing and illustrating its indestructo school furniture and equipment. The catalog shows a varied line of movable and adjustable school seats, indestructible steel desks, steel teachers' desks and bookcases, program clocks, adjustable steel manual training benches, laboratory and domestic science furniture.

Information concerning the catalog may be had by addressing the firm at Indianapolis, Ind. **Right!**

The teacher was giving the class a natural-history lecture on Australia.

"There is one animal," she said, "none of you have mentioned. It does not stand up on its legs all the time. It does not walk like other animals, but takes funny little skips. What is it?"

And the class yelled with one voice: "Charlie Chaplin."

A teacher of the primary room in a public school became nervous over the restlessness and noise her pupils were making and endeavored to stop it by suggesting: "Now, let's be quiet for just a moment, so quiet that we could hear a pin drop." After a few minutes of peace in the room an impatient youngster in the rear of the room shouted: "Well, let 'er drop!"

It was a lesson on punctuation, and Jimmy was falling asleep at his desk.

"Now," said the teacher, "if I say, 'I must leave, as I have an engagement—By the way what is the time?' I place a 'dash' after 'engagement,' because the sentence is broken off abruptly."

At that moment she caught sight of the dozing boy.

"Now, then, Jimmy, you are not listening. What was I saying?" she asked him.

"Please, Miss Smith," said Jimmy, with a start, "you were telling us you said 'dash' because your engagement was broken off abruptly!"

Teacher—Willie Jones, you have forgotten your pencil again, eh?

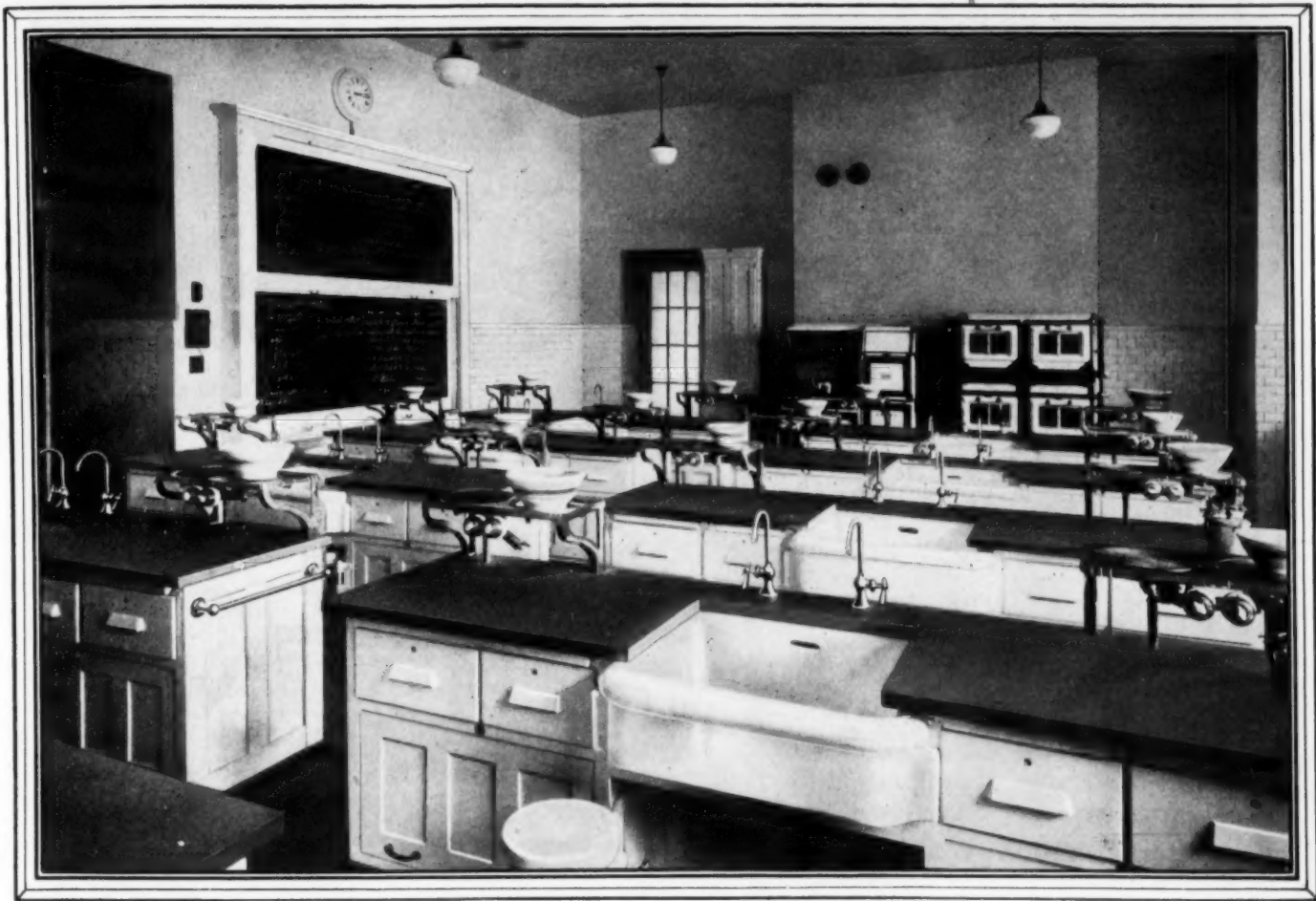
Willie Jones—Yes, teacher.

Teacher—What would you think of a soldier without his gun?

Willie Jones—I'd think he was an officer.

THINKING AND FIGHTING.

There was a time when people used to have a barn-raising, and then they blacked each other's eyes and bloodied each other's noses, and it was a coward who refused to fight. Your fathers and mothers will tell you of those days. Men will not do it now. The courageous men will not fight as they used to fight. Only a few generations ago men fought our their differences with their sidearms and slew each other in the name of honor. They do not do it now. A generation or two hence, men will think longer and more seriously before they fight out their differences on the field of battle.—Augustus O. Thomas.



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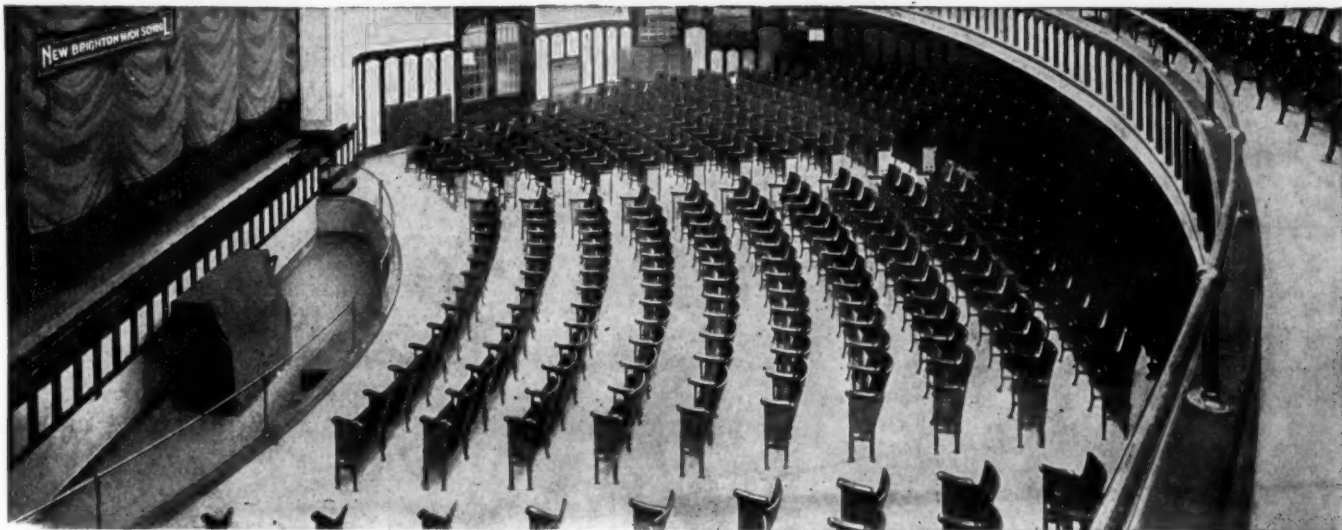
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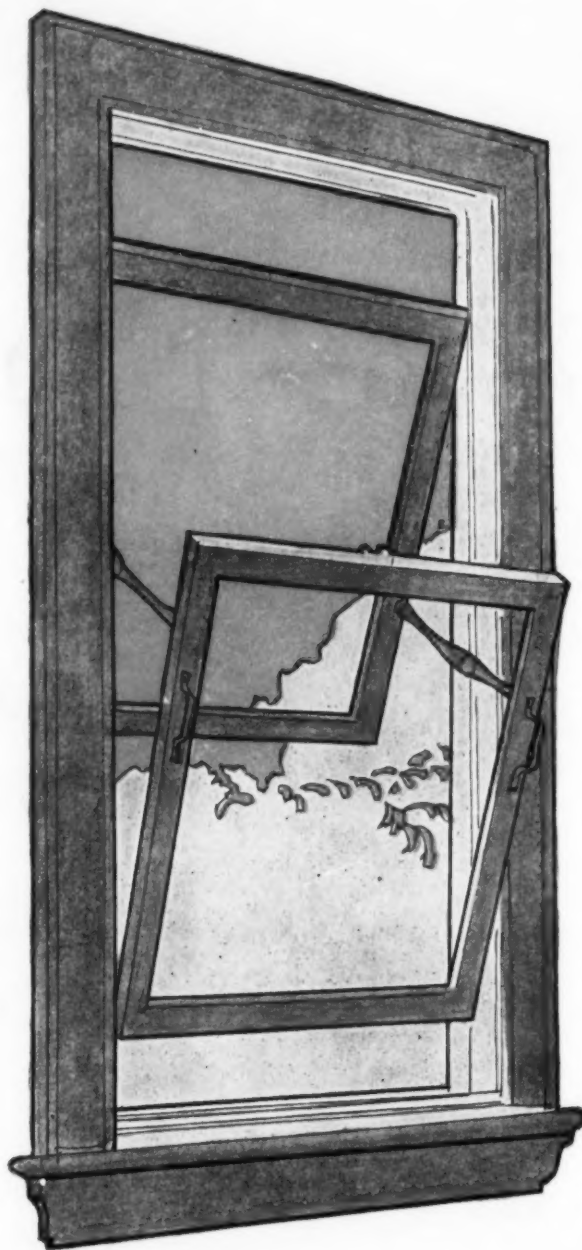
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